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THE IRON AGE

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WHERE CASCADING ROCK PLAYS HOB

Use
BETHLEHEM
Abrasive-Resisting
PLATES

MANY operators of equipment handling highly abrasive materials report Bethlehem Abrasive-Resisting Plates have from two to ten times the service life of medium carbon steel. Some report increased life over alloy steel plates selling at from four to eight times as much. All agree that Bethlehem Abrasive-Resisting Plates keep replacements at a minimum and materially reduce maintenance costs all along the line.

Bethlehem pioneered in manufacturing this moderately priced abrasive-resisting steel. It is made in two grades: No. 235 and No. 300. In each case the Brinell hardness corresponds approximately to the grade number, with ductility decreasing somewhat as hardness increases. Data on forming and fabricating and reasonable expectation of service life are freely available upon request.

BETHLEHEM STEEL COMPANY



▲▲▲ THE IRON AGE ▲▲▲

JUNE 16, 1938

ESTABLISHED 1855

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Who Will Tear Down the Fences?

HUMAN nature does not change a great deal as one grows older.

When I was a boy, there was a tall wooden fence which separated one lot from another down near the railroad tracks.

The boys who lived on the other side of the tracks and the boys who lived on my side of them used to converse every afternoon after school from opposite sides of the fence.

Each group, enroute to the established rendezvous, would collect the maximum portable supply of rocks, antiquated vegetables, overripe eggs and, when the Lord provided, a dead cat or two.

Armed with this ordnance, a battle royal would ensue between the two geographical sections. Over the fence would go a barrage of animal, mineral and vegetable matter delivered with energy and dispatch in both directions. At the conclusion of festivities, there would usually be as many casualties on one side of the fence as on the other, and an equal amount of debris.

After the daily battle, each side would go its separate way and never, under any circumstances, would a member of one gang mingle with the other.

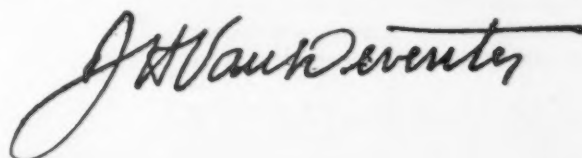
Why? No one knew, except the old gentleman on whose land the fence stood. Said he: "The fence is to blame. It keeps the boys from mingling and getting to know each other." So he had it pulled down. With the fence gone, there was not much fun in exchanging dead cats or other tokens of enmity. And before long the erstwhile antagonists were mingling in more peaceful pastime.

I think that there is a timely lesson in this for us older folk. What we need most today is the tearing down of the fences which separate group from group and class from class in America. With the fences gone, there will not be any more fun in exchanging dead cat barrages.

Who is to pull down these fences?

This week, the Advertising Federation of America is meeting in Detroit. Can you think of a bigger or a better task for the men who mold the public opinion and the public mind of America than that of pulling down these fences? I cannot.

Get these fences down, boys, and then you can take your vegetables and other products to market, instead of seeing them destroyed in the useless and unprofitable class warfare.



What Machines Are Doing to

By JOHN H. VAN DEVENTER
Editor, The Iron Age

WHAT about the impact of technology upon the individual in the automobile industry whose skill has become outmoded by a new machine or a change in process? What about the fate of the hand strippers, the wood body builders and the topdeck trimmers of the 1920's? Do such men go out when the new machine or new process comes in, or are they re-absorbed in some other operation or department?

No such conclusive data are available to answer these questions as has been presented to you for aggregate employment in the industry. Nor is the record of employee turnover, as kept by the individual plants of the industry, a satisfactory indicator for the reason that the largest percentage of the total turnover occurs in the first week of employment and results from the newcomer not liking his job, getting another one, or not being fitted to do the work for which he was hired.

Another factor that makes it difficult to calculate individual displacement is that if an employee of one plant transfers his services to another plant, in the same industry or even under the same corporation, his continuity of employment ceases from the statistical standpoint. He is counted as an "out" by the plant that he leaves and as an "in" by the plant to which he goes, so that so far as the industry records go he is two men and not one. And yet actually there has been no displacement, technological or otherwise when an employee continues in the industry.

In spite of these difficulties, however, the Automobile Manufacturers Association has been recently engaged in a considerable study of this subject in their member plants which comprise

This is the second part of an article based on an address by the author on June 6 before the Economic Club of Detroit. The first part appeared in the issue of June 9.

the greater part of the automobile industry. This survey, while necessarily not complete as a statistical measure of the entire employment and displacement picture, is sufficiently broad to present a reliable cross-sectional finding that is indicative of the entire industry. I have been able to obtain some of these findings for the purpose of reinforcing this presentation with the latest available facts.

The average record of continuous employment, in their present place of work, for the men now employed in the plants of the A.M.A. members is 5.9 years. This does not take account of the years that many of these men must have spent previously in the automobile industry but in other plants. One-fifth of the men now employed have had ten years or more in one plant.

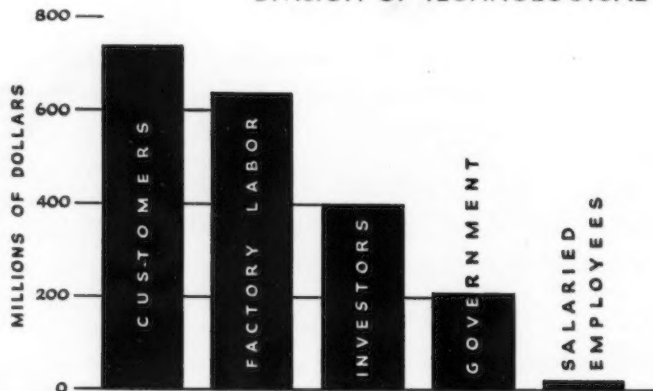
In January of this year, 21 per cent of the hourly paid men on plant payrolls were 45 years of age or over. The proportion of the men of 45 years or older employed by the industry was increased 9 per cent from 1920 to 1930 according to Census figures, whereas with the performance of other industries as a criterion, a decrease of 7.1 per cent in the propor-

tion of these older men would have been expectable. A study of labor turnover by age groups in recent years shows that the older employees have a very low turnover rate and that the employment flux in the industry is almost entirely among those of less than 30 years of age.

These data show that despite constant technological change in the industry, the great body of regular workers have enjoyed quite stable conditions of employment. The policy of the industry may be to wear out machines as fast as possible by keeping them busy, but the age experience proves conclusively that this policy is not applied to men.

One reason for this above the average record is that the members of the industry make a special effort to fit workers into new jobs when technology outmodes their old ones. Classes are established for instructing such workers in new operations for which there is a demand. Departments are devoted to light bench operations which can be handled by older men who do not wish or are unable to learn a new trade. These supplement the customary occupations traditionally reserved for older workers.

DIVISION OF TECHNOLOGICAL BENEFITS



Automobile Workers--II

An Economic Appraisal of the Motor Car Industry

As a result of this policy, shifts in occupation are a normal process of the industry. Such shifts are aided by the fact, as disclosed by the U. S. Employment Service, that 27 per cent of the occupations in our automobile plants require no previous experience and that 90 per cent of the jobs require less than one year's experience.

An examination of the records of 1927 employees with service records of five years or more, chosen at random from the files of three of the oldest plants in the industry, shows an average number of $4\frac{1}{2}$ different jobs per employee during the total period of employment.

During the past ten years technological changes have caused the discontinuance of four departments in the Nash plant. Of the 490 men whose old jobs disappeared, 391 were satisfactorily placed in new jobs. Thirty-nine quit voluntarily to take or seek other work. Only 60 of the 490 could not be placed. Thus only 12 per cent of the number involved were unable or unwilling to adapt themselves to a new routine.

And now we come to that part of this study which to me is the most interesting and significant of all.

It is the part that tells why the automobile industry has made such astonishing progress by diligently following the basic prosperity formula.

To refresh your minds, let me repeat this formula. More power, better machinery; better output per man hour, higher wages; more customer value in price or quality.

Let us take this formula apart bit by bit and see what the automobile makers have done with it.

First there is the factor of power. Power applied through machinery frees man from his modest limits of strength and endurance and makes him a superman free from physical limitation.

In 1900, the sunset of the horse and buggy days, there was utilized in all vehicle production in the United States, a total of not more than 475,000 hp., as measured by available capacity. Today, the manufacturers of road transportation equipment have nearly 2 million hp. available for use.

It is interesting, while not strictly pertinent to this chain of thought, to reflect that the big power plants of the automobile industry are engaged in turning out little power plants for

customer transportation. And note how too, the capacity of these little plants has grown and what a tremendous aggregate of new power they put to work each year in transportation. In 1927, the aggregate maximum hp. of the automobiles manufactured that year was 130 million hp. In 1937, the aggregate power of the cars produced was 393 million.

Now for the second factor—that of better machinery. We know, instinctively, that the motor car builders constitute the largest single factor in the demand for machine tools, small tools, forging and stamping equipment, conveyors and a host of other mechanical appliances. But I do not believe that many of you realize the vast nature of this demand. In the decade between 1925 and 1934 the industry, for new machine tool equipment alone, expended the vast sum of \$411,000,000.

The third factor of our prosperity formula is "Better output per man hour." The combination of the increased application of power and the tremendous investment in better machinery and equipment could not fail to effect a material increase in the efficiency of parts production. More accurate piston pins, for example, can be ground today than could be produced 10 years ago and at a man hour saving of roughly 75 per cent. Other operations show different savings, some greater, many less. But strangely enough, in the face of such efficiency gains there has been no reduction in the number of man-weeks necessary to produce a car.

One of the lesser reasons for this may be the slight shortening of the working week since 1932. But that is a minor cause indeed. The explanation of the apparent discrepancy between more efficient operations and yet equal or even greater total labor time cost lies elsewhere. It lies in the fact that

OF AUTOMOBILE INDUSTRY 1929-1937

CUSTOMERS—Saving to customers over period due to reduction in prices from 1928 parity with other manufactured goods. U. S. Bureau of Labor Statistics data.

FACTORY LABOR—Difference between actual factory payrolls and what payrolls would have been had the industry paid no more than national average wages. U. S. Census of Manufactures data.

INVESTORS—Corporate Earnings in excess of six per cent on Net Worth. Published corporate statements.

GOVERNMENT—Special excise tax paid Federal Government by motor vehicle manufacturers on autos and auto parts under the theory that they are luxuries. U. S. Bureau of Internal Revenue report.

SALARIED EMPLOYEES—Difference between actual salary payroll and what salaries would have been had the industry paid no more than the national average. Census of Manufactures.

PRODUCTIVE SAVINGS PLOWED BACK INTO CONSTANTLY IMPROVED CAR

— RESULT —

UNCHANGED LABOR REQUIREMENTS PER CAR



EACH FIGURE REPRESENTS ONE MAN—WEEK OF WORK

1925

USING

USING

1938

TURRET LATHES
ENGINE LATHE

VS. AUTOMATIC SCREW MACHINE

VS. CRANKSHAFT LATHE
CENTERLESS GRINDER

VS. MILLING MACHINE

VS. TOGGLE PRESS

VS. BROACH, HOBBIING MACHINE

VS. CONTINUOUS CONVEYOR

VS. UPSET

VS. COUNTERWEIGHTED POWER TOOLS

VS. ROTARY SHEARS

VS. JIG FLASH WELDING

VS. TUNGSTEN CARBIDE

VS. MULTI-PLEATER

VS. SPRAYED LACQUER

VS. BUTT WELDING

VS. CONVEYOR PROCESS

PLANNER
HYDRAULIC PRESS
MILLING MACHINE
TRUCKING SUPPLIES
SCREW MACHINE
HAND WRENCHES
HAND TRIMMING
TORCH WELDING
CARBON TOOL STEEL
HAND SEWING & STUFFING
HAND BRUSH, SLOW DRYING ENAMEL
RIVETING
FLOOR MOLDING & CASTING

PRODUCED

PRODUCES

COMPOSITE BODY WITH SQUEAKY
WOODSILLS & WEAK CLOTH ROOF
SIMPLE, EASILY TWISTED FRAME, UNSTABLE
STIFF UNCOMFORTABLE SPRINGS
4-CYLINDER SLOW ENGINE
2-WHEEL MECHANICAL BRAKES
PLAIN GLASS
SMALL HI-PRESSURE TIRES
LEAKY DOORS & WINDOWS
FLAT FLOPPING FENDERS
FRAGILE, DANGEROUS WOOD
STEERING WHEEL
NICKEL PLATING

VS. ALL STEEL SILENCED SAFETY BODY
VS. RIGID X FRAME & STRONG BUMPER
VS. SOFT SPRINGS, SHOCKS & SWAY BARS
VS. 6 1/2 & 8 1/2 WITH POWER & ECONOMY
VS. 4-WHEEL HYDRAULIC
VS. SAFETY PLATE
VS. BALLOONS
VS. FORCED DRAFT AIR CONDITIONING
VS. DEEP DRAWN, STREAMLINED, ONE PIECE
VS. PLASTIC RIM WITH SAFETY
VS. SPRING STEEL SPOKES
VS. CHROMIUM



VS.



AVERAGE SPECIFICATIONS

\$1007 DELIVERED PRICE

106.5" WHEELBASE

2356 lbs. SHIPPING WEIGHT

32.0 MAXIMUM DEVELOPED
HORSE POWER

AVERAGE SPECIFICATIONS

VS. \$770 DELIVERED PRICE

VS. 114.7" WHEELBASE

VS. 2896 lbs. SHIPPING WEIGHT

VS. 83.9 MAXIMUM DEVELOPED
HORSE POWER

we are dealing in this case with a rubber measuring stick.

The measuring stick of production in the automobile industry is the unit car, not the number of kinds of parts which go into it.

I remember the time when the unit car averaged not more than two cylinders, two pistons, two connecting rods. Today the average car has six or eight cylinders with a corresponding multiplication of parts.

Fifteen years ago the typical low priced car had approximately 8000 parts. Today there are 15,000 parts in the original assembly, many of which are welded together into multi-function units such as the body.

Take the average car produced in 1925 and contrast it with the average car of today.

The average car of 1925 sold for \$1,006 delivered. The average car of today sells for \$779—a 23 per cent price reduction.

The average car of today has 7 per cent more wheelbase and 23 per cent more weight.

The average car of 1925 developed a maximum of 32 hp. Today's average car develops 82.4 hp. One hundred and fifty-eight per cent more hp.

The average car of 1925 had a slow 4-cylinder engine, two wheel mechanical brakes, plain glass, small high pressure tires, and flat floppy fenders. The average car of today has a six or eight cylinder fast engine, four-wheel hydraulic brakes, safety plate glass, balloon tires and deep drawn one-piece fenders.

Efficiency gains and time savings in the automobile industry have in very considerable part gone to stretch the unit of value for the customer's benefit. That there have been tremendous cost savings effected in spite of stationary over-all cost is reflected in the vastly superior car of today which sells for so much less money.

The fourth factor of our efficiency formula is "higher wages."

Hourly wage rates in the automobile industry since the middle of 1937 have averaged between 90 and 92c. per hour compared with 75c. in 1928. Weekly earnings in the industry in 1937 averaged \$31.58 as compared with an average of \$25.11 for all manufacturing industry.

Wage benefits to workers in the automobile industry, measured by the difference between its actual payrolls and what these would have been had the industry paid no more than national average manufacturing wages have amounted to \$664 millions since 1929.

1905

MANUFACTURE of automobile fenders in 1905 was characteristic of most of the processes in that pre-mechanized age. Of course, if we did it that way today, we could employ more people, provided that we could find enough people who would pay high prices for cars.

And now we come to the last factor in our prosperity formula. It is "more customer value in price and quality."

I have already touched upon the subject of increased quality which is an outstanding recipient of the benefits of progressive efficiency gains. However, there is a more tangible though no less important component of customer benefit reflected in price performance.

Since 1929, the automobile industry has handed to its customers \$738 millions as their "price" share of the industry's efficiency gains secured by following the prosperity formula. This is the amount which represents the industry's reduction in prices over that 10-year period from the 1928 motor car price parity with all other manufactured products. Mind you, this is a price benefit only and takes no account of the even more important benefit of improved quality.

I hold no brief for the automobile industry. It has its faults and its shortcomings and there is plenty of room in it for improvement. But it is an industry whose record, as I have set before you, no serious students of economics can afford to overlook.

As the most intensively mechanized industry in the world, its performance has demonstrated conclusively, I think, the compatibility of men and machines when cooperating according to the terms of the prosperity formula. But it has done more than this.

Whether by chance, whether by the blind force of driving competition or whether by superior executive calibre in its management is immaterial, but this industry apparently has hit upon a perpetuating principle which others



1938

TODAY, far better fenders are produced in a mere fraction of the time of 1905, because modernized mechanization has taught us the way. And because of this, automobile buyers are numbered in millions instead of thousands.

SPECIFICATIONS FOR CHEAPEST STANDARD TWO-DOOR SEDAN

Make	Cyls.	Wheel- base	Dry Weight	Max. Brake H.P.	Delivered Price
1928 Oldsmobile	6	114	2795	55	\$1050
1938 Chevrolet	6	112	2800	85	668
1928 DeSoto	6	109	2580	55	960
1938 Plymouth	6	112	2774	82	685
1928 Nash-Special	6	113	3250	52	1380
1938 Lafayette	6	117	3200	95	805
1928 Studebaker	6	113	3302	50	1355
1938 Studebaker	6	116	3140	90	995
1928 Packard	6	126	4000	82	2250
1938 Packard	8	127	3600	120	1225
1928 Hudson	6	119	3575	92	1420
1938 Hudson	6	122	3015	101	948

Aside from improvements in quality and addition of parts, the price comparisons of similar types of 1928 and 1938 are interesting.

Source: Automobile Manufacturers' Association

BETTER PRODUCT

New Machinery & Processes	Device or Method Displaced	Purpose in Installation	Effect on Labor Requirements
Hypoid Gear Generators	Rotary Gear Cutter	Lower Car, more headroom, & no floor tunnel.	No Labor Savings
Gear Shavers & Hones & Mating Machines	Run-in Burnisher or no treatment at all	Quiet operation in second and low gears with longer transmission life.	Increased labor requirements & higher costs.
Dynamic & Static balancers & also piston, pin, & rod scales	Static Balancer or no previous testing or matching	Quiet, vibration free operation, lower bearing loads and longer life.	Higher labor costs.
Diamond drills	Hone, ream, or scrape	Longer life, oil & gas economy from better finish.	Perhaps some small labor saving.
Electric Gauges for Engine posts	Go - no - go Slip Gauges	Reduce oil and gas consumption and increase engine life.	No saving.
High Frequency Bearing and Cam Hardener	Case Hardening or no treatment	Longer repair-free car life with reduced oil consumption.	Small labor saving. Eliminate Cyanide Hazard.
Rotary Casting of Brake Drums	None	Squeak-free long lived, non-warping drums.	Additional labor required.
Bonderizing	No treatment	Eliminate flaking of lacquer or rusting underneath.	Considerable additional cost.
Mammoth Body Presses	Smaller Presses; some welding jigs	Solid top, all steel body, simpler construction.	Some saving in direct labor offset by need for more dampening material.
Leaf and coil spring grinders	No previous finishing process	Much longer life with lighter weight and greater and more uniform resiliency.	Considerable additional labor cost.
Conveyor heat treat	Hand-fed Ovens	Uniform characteristics; fewer rejects and failures in service.	Some saving in labor, much saving of sweat.

BETTER JOBS

New Machine	Displaced	Benefits Achieved
Counter balanced tools	Tools lifted by hand to each job	Less back strain and fatigue. No possibility of hernia.
Shot blast	Sand blast	Eliminates dust hazard and gives smoother surfaces at considerable expense for shot.
Multiple control on presses, monitor bars	A single release with no safety stop	Eliminates risk of accidents.
Incandescent lamps along with mercury arcs	Mercury arcs used alone	Reduces stroboscopic hazard and provides emergency light after temporary failure of current. Current consumption higher.
Water screen spray booths	Dry back booths	Dust nuisance and fire hazard reduced. Considerable recovery of lacquer solids for re-use.
Bench height power-driven conveyor	Trucking and piling or gravity conveyor	No lifting of work, little chance for dropping work. Clear aisles reduce accident hazards.
Air conditioning	The weather and a few steam pipes	Better working condition. Less variation in product dimensions and finish.
Skids with stacking trucks	Hand loading and piling	Lifting strains eliminated. Saving in labor as well.

Progress in improvement in mechanization is not necessarily for cost reduction. Frequently it is for the purpose of improving quality or of relieving workers of physical strain. The improvements cited above fall into these categories.

will do well to study. It has learned that it pays to divide its efficiency gains among its customers, its workers and its investors.

Here is an industry which, even during the troublesome times since 1929 has benefited its customers by \$738 million, its workers by \$644 million and its investors by \$400 million. Of each dollar of the increased wealth this has given the largest share to its customers, the next largest to its



MATHEW "SCOTTY" SMITH (right), in charge of engine production at the Chrysler factory, 12200 East Jefferson Avenue, Detroit, is one of the real veterans of the automotive industry. He has been with Walter P. Chrysler ever since Mr. Chrysler identified himself with the automobile.

workers and has retained the smallest portion for dividends and surplus.

The ratios of this division may not be ideal but the principle involved is the basic fertilizer of consumption. When that principle becomes adopted and properly applied by all industries in America, we will see the end of the imaginary conflict between employers and employed. For then, having mutually solved the problem of division we can unite, with the machine for solving the problem of multiplication of production and consuming power that alone can lead to sound and progressing prosperity.

Large Circular Barrel Cams Accurately Flame-Cut

By W. B. BROWER

Air Reduction Sales Co., New York

FLAME cutting of accurate shapes from flat steel plates or slabs is well known and widely practiced. But adaptation of shape cutting machines to operate in three dimensions to produce accurate cuts in circular workpieces, as in the production of the large barrel or cylinder cam here illustrated, is unique.

These cams are used in the No. 315 automatic beaders built at the Brooklyn, N. Y., plant of the E. W. Bliss Co. They are of heavy-duty type and require accurate working faces.

An Airco-DB No. 6 Oxygraph (Fig. 1), with auxiliary equipment developed by S. H. Durbin, assistant superintendent of the Brooklyn plant, is employed for the cutting. The machine itself is of standard design, installed some time ago for various flat-plate shape cutting jobs. But in addition to the auxiliary equipment, its adaptation to the cam cutting involved a unique feature, namely, use of the magnetic tracing device not only for its designed purpose but also as the sole motive power for turning the special auxiliary cam-cutting set-up,

which weighs 700 lb. As shown in Fig. 2, this set-up consists of a cylindrical framework mounted on ball-bearing "balancing ways" which serve as the mounting for a master cam or templet and the cam blank to be cut.

Fig. 3 shows the finished job in two pieces. The cam is made from 1¼-in. low-carbon machine steel flat plate, which is first cut to the required rec-

tangular shape, then bent cold to a semi-circle and finally machined inside out outside on a lathe. When finish turned, the semi-circular pieces measure 32 11/32 in. in outside diameter, 30 9/32 in. inside diameter, and 16 in. in width.

The master cam or templet was made from 3/32-in. flat cold-rolled sheet, bent cold to the same radius as

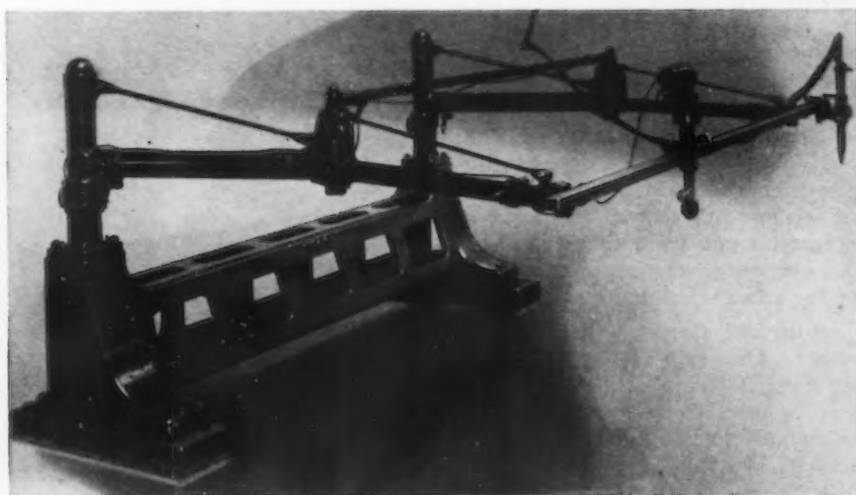


FIG. 1—An Airco-DB No. 6 Oxygraph with auxiliary equipment shown in close-up in the other figures is employed for cutting large "inside" or barrel cams for Bliss No. 315 automatic beaders.

the cam to be made. The opening for the magnetic roller is provided with stiffeners shaped so as not to interfere with the roller. The master cam is graduated in increments of $1/32$ in. to show how many thirty-seconds of an inch off center the cutting torch should be set to assure that the sides of the cut will be parallel throughout the curves. The set-up works in conjunction with another fixture located beyond the magnetic tracing device, on the work-table of the Oxygraph. This fixture contacts with the torch bar through rollers, front and back, to provide lateral adjustments of the torch bar, that carries the magnetic tracing device and the cutting torch.

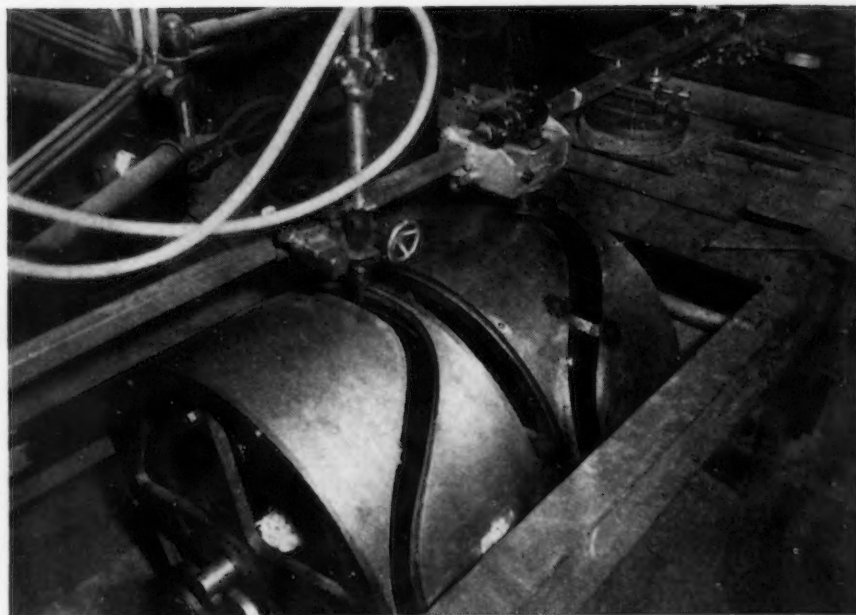
As the cross-slide screw of the compensating device has 16 threads to the inch, a half turn of the crank sets the cutting torch $1/32$ in. off center. The torch is mounted in an adjustable adapter so that torch and magnetic roller can be set at the start of operations to the same center-line.

In operation, the master cam and workpiece are first mounted on the revolving fixture or mandrel. Next, the entire assembly is balanced by means of eccentric, adjustable machine-steel bars and, finally, placed in accurate alinement with the torch bar of the cutting machine. Fig. 4 shows the set-up ready for the start of the cut. Master cam and workpiece revolve together as one piece while the cut progresses. The torch is permitted only lateral movement by the master cam and, as before stated, rotary propulsion is accomplished by the traction of the magnetic roller bearing against the edges of the master cam.

Cutting of the cam is further pictured in Figs. 5 and 6. Although four operators appear in these views, only two are actually necessary for the cutting operation, one to control the off-center position of the cutting torch and the other to take care of the round steel bar balancing weights, clearly visible in Fig. 5. These weights have to be adjusted on their eccentric centers to compensate for the kerf metal cut from the workpiece. This kerf metal amounts to about 4 lb. for the entire operation.

Set-up and operation data are as follows: Oxygraph set-up and cutting time, $3\frac{1}{2}$ hr.; finishing time (machine or file smoothing of the flame-cut surfaces), 8 hr.; cutting tip, Airco-DB style 144, No. 2; oxygen pressure, 50 lb.; acetylene pressure, 3 lb.; cutting speed 14 in. per min.; and lineal inches cut, 130.

It is estimated that done on a bor-



ABOVE

FIG. 2—Close-up of cam cutting set-up. The cut cam is shown at the left, and the master cam, magnetic tracing device and attachment for paralleling the cuts are at the right.

o o o

BELOW

FIG. 4—Start of the barrel cam flame-cutting operation. Although four men are shown, only two are necessary for the actual cutting.



FIG. 3—Finished barrel cam for side and inside diameters are respectively, and the thickness



ABOVE

FIG. 5—Finishing the first cut of the cylinder cam. The round steel bar balancing weights are clearly visible in this view.

• • •

BELOW

FIG. 6—Beginning the last quarter, or the home-stretch cut of the barrel cam.



ing mill this cam job would have taken 40 hr., plus 16 hr. additional fitting time. With the Oxygraph cutting it was only necessary to make three sets of finished cams to pay for the cost of the special gas cutting set-up, including making of the master cam.

One of the first applications of the No. 1 Oxygraph made by the Davis-Bournonville Co., the predecessor of the Air Reduction Sales Co., was in cutting plate cams for Brown & Sharpe automatic screw machine. Cutting of these cams, however, was simply a matter of following a layout on a flat steel plate.

Metal Gage Measured By Magnetism

THE Commercial Engineering Laboratories, Detroit, is marketing an instrument designated as a "magnetic thickness gage," which is used for measuring the thickness of iron and steel by direct contact with one side only. The instrument was originally developed for quickly gaging the walls of automobile engine cylinder blocks after being rough machined. Cast iron pipe also can be inspected for variations in wall thickness, and steel plates and tubes subject to corrosion on one side can be measured by contact with the other side.

Three types of instruments have been developed and are now available. The form used for testing automobile cylinders is a small hand model, consisting essentially of a cylindrical shell containing a magnet and energizing coil. Two pole pieces extend slightly from the shell near the ends, and are ground carefully in a special grinding fixture to conform to the cylinder bore. An indicating meter is located on top of the cylinder, and a selector switch just below the dial permits the operator to take readings of the thickness of the cylinder wall at either pole piece.

A second form of the magnetic measuring instrument is designed to measure the wall thickness of cast iron pipe by contact with the outside. And a third form of the instrument will measure the thickness of vitreous enamel on steel panels such as used in electric refrigerators. Other forms of the instrument may be developed to meet individual conditions.

New Yale & Towne

Plant Stresses

Daylight

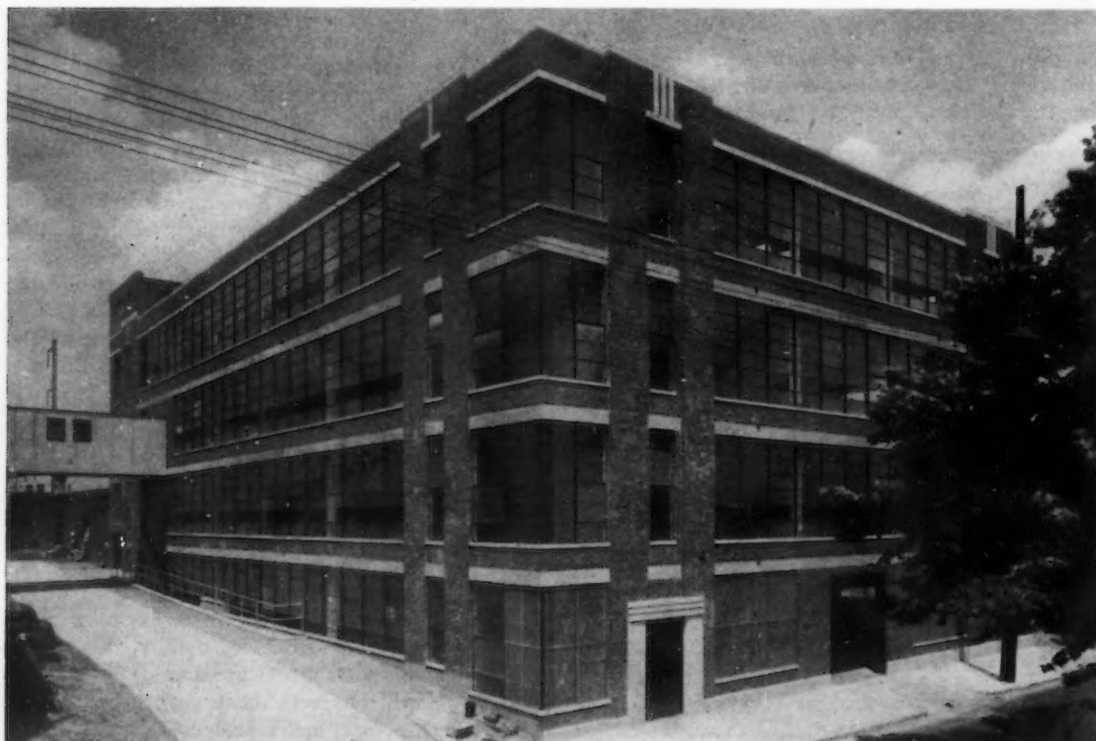
THE application of daylight construction to multi-story industrial buildings is well illustrated by the new four-story building in Philadelphia, where the Yale & Towne Mfg. Co. is now producing and assembling electric hoists, hand lift trucks, skid platforms and electric industrial trucks and tractors.

Designed and built by the Austin Co. according to modern functional principles of design, the plant is rein-

forced concrete, with set back columns to permit the installation of practically continuous horizontal bands of sash. Floors are of the flat slab type and extend beyond the columns to the building line where they support wall masonry. Thus, the concrete floor band, together with cast stone sills, serves to emphasize the building's horizontal sweep by contrast with sash and brick work. Columns are spaced on 20-ft. centers and there is

an average ceiling height of 14 ft. throughout the first three floors. The fourth, where a monitor has been installed to further increase the daylight, has a center aisle giving 60-ft. clear span and a clearance of 18 ft. in the monitor section. The roof is of 2-in. gypsum plank, covered by a bonded waterproofing.

The sash forms four bands around three sides of the building intercepted only by narrow vertical shafts of



° ° °
THIS new four-story building recently completed by the Austin Co. at Philadelphia for the Yale & Towne Mfg. Co. illustrates the application of daylight construction to multi-story industrial building. Continuous horizontal runs of sash, 10 ft. 3 in. high, provide daylight on three sides. The fourth side is brick.

° ° °

CONCRETE poured into plywood forms gives an even reflecting surface when painted. This view shows a section of the second floor of the Yale & Towne building, with group driven screw machines and lathes at the right.



masonry introduced to provide vertical contrast near the corners. The production and assembly lines have been laid out along these three daylighted walls, while storage of tools, semi-finished parts and other materials is concentrated in the center bays and along the fourth wall.

Lighting fixtures have been installed on 10-ft. centers and are of two types, with glass-steel reflectors to provide 18 ft.-candles throughout the working areas, and with R.L.M. reflectors to provide 8 ft.-candles in the storage areas.

The first floor of the new building is devoted to production of skid platforms of several types. Steel is delivered at the rear by truck and unloaded directly into stock racks ranged along the masonry wall, where special stacking facilities have been provided. Cutters, shears, punch presses, saws and shapers for fabricating skid legs and frames are arranged in the aisles opposite these stock stacks. Beyond, in the same aisle, is a paint booth with revolving rack for automatic dipping and early drying, from which parts are placed on final drying racks, carried to the assembly station by lift trucks.

Lumber for the skid platforms is delivered by truck at the front of the building, toward which the metal parts progress, and it is processed and assembled on the metal bases adjacent to the truck loading door, from which skids are shipped or transferred for storage.

This production line is supplemented

by welding and other fabricating facilities on the other side of this floor, which is entirely devoted to the manufacture of a wide variety of skid platforms and pallettes.

The second floor is used principally for the machining of parts for hand lift trucks. A complete battery of modern machine tools is located around the three outer walls, and the tool room is located in the center aisle. While some of these machines are motor-driven, those operated by belt are grouped in fours from each multiple drive shaft. Most of the machines are set on a 10-deg. angle, simplifying the stacking of stock and feeding the machines. Rough castings and other parts are held in stock bins mounted on skid platforms which are stacked two-high in the floor area between the tool room and the rear of the building adjoining the old struc-

ture. They are served by electric lift trucks operating in 10-ft. aisles.

The third floor is devoted to the assembly of electric hoists, motor drives and hoist units for electric lift trucks. Benches on which the units are assembled have been set up in lines at right angles to the side walls and are served by overhead chain hoists. Motor drives are transferred to the principal assembly plant across the street for testing and assembly into finished trucks. Parts for use in the assembly of products handled on this floor are stored in bins erected against the windowless rear wall.

At present, the fourth floor area is being devoted to storage of finished parts and products.

One outstanding feature of the plant are the ceilings, which were poured in plywood forms and have a smooth and uniform reflecting surface, which was painted without any special pointing.

1939 Auto Production To Be Started Slowly

MILWAUKEE.—With the completion of the usual annual contracts between the A. O. Smith Corp., Milwaukee, and automobile manufacturers for pressed steel frame requirements for 1939 models, it is indicated that commitments by the factories approximate the same level as for 1938 cars. It is also indicated that production of new models this fall will not be started off at the high levels which prevailed in 1937.

While hopeful of higher production in the fall and next spring than was experienced during the past season, automobile manufacturers will make an effort to spread 1939 demands over several months rather than have the sharp peaks experienced in the 1937-38 period. The frame awards also indicate that production of cars will be started off easily this fall to test demand. First large deliveries of frames are scheduled for about Aug. 1. Shipments of frames for 1938 models will be completed about the end of July.

Welding Facilitates Fabrication Of

THIS article discusses briefly the application of arc welding in the design and construction of the \$600,000 flood control project across Turtle Creek just below the Westinghouse East Pittsburgh works.

THE 1936 Pittsburgh flood is still fresh in the memories of many who saw it or were in any way affected by its fury. The Westinghouse Electric & Mfg. Co., situated in the Turtle Creek Valley about one mile upstream from the point where Turtle Creek empties into the Monongahela River, was at this time flooded for the third time in 29 years. Many industrial plants in the Pittsburgh area that are vulnerable to floods are situated so that they cannot take any direct action to protect themselves. The fortunate location of the Westinghouse company, however, has made it possible to erect flood gates and prevent future flooding of its East Pittsburgh works.

At a point just downstream from the works and under the famous George Westinghouse bridge the Turtle Creek runs parallel to a road. The road and creek at this point are bounded by a high natural bank and an extensive railroad embankment. Also the high water in the creek is not caused by the rainfall on the Turtle Creek watershed, but from back-water floods from the Monongahela River. This set of conditions was ideal for developing a suitable system of flood control and J. E. Webster's* dream of many years was finally realized when a sum of \$600,000 was appropriated by the Westinghouse company to construct flood gates across the valley and a 15,000-hp. pumping station.

The general layout of the flood gates and pumping station is shown

* J. E. Webster, Westinghouse general works engineer, supervised the design and construction of the flood control project discussed in this article.

in Fig. 1. A large gate 83 ft. 8 in. long and 28 ft. high spans the creek and a smaller gate 40 ft. long and 20 ft. high spans the adjacent highway. The ends of the gates are supported in concrete piers and provided with anti-friction rollers to facilitate raising and lowering. Normally the gates are held at an elevation of 20 ft.

above the street level to accommodate traffic. The gates are raised and lowered by means of cables operated by auxiliary motors and are not put into use until the water reaches an elevation of 734 ft. above sea level, corresponding to a water depth of 31 ft. 3 in. above lock No. 2 on the Monongahela River. (A creek eleva-

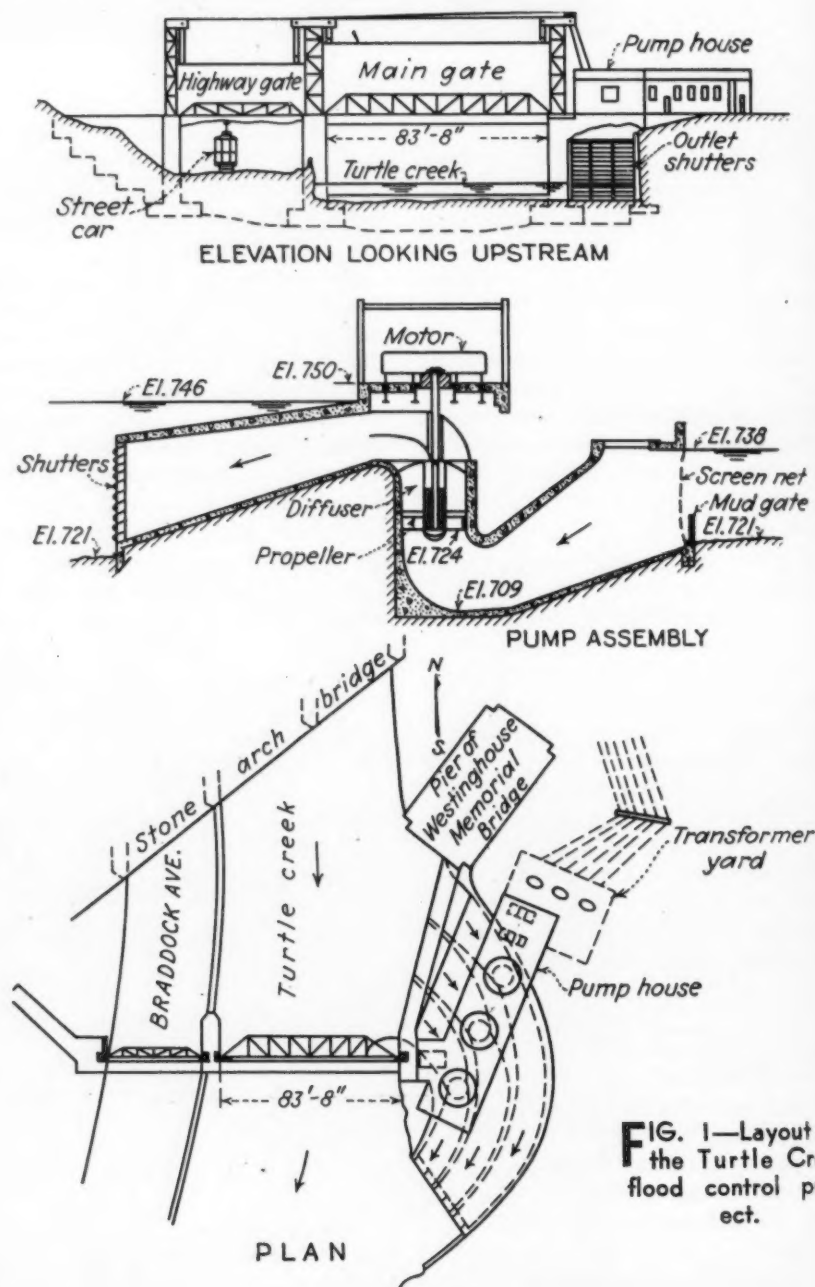


FIG. 1—Layout of the Turtle Creek flood control project.

Flood Gates

By CHARLES H. JENNINGS

Engineer in Charge of Welding Research, Westinghouse Electric & Mfg. Co.

tion of 738 ft. can be obtained before causing damage to the Westinghouse plant.)

Pumping Station Steel Also Arc Welded

Arc welding was used exclusively in fabricating the gates, the steel reinforcements for the concrete foundations and piers, the structural steel for the pumping station and the diffuser chambers on the outlet side of the pumps. The three 5000-hp. synchronous motors used for driving the pumps are also of arc welded construction.

The two gates consist essentially of two horizontal trusses fabricated from heavy "H" sections, a series of interlacing vertical trusses and a solid face composed of numerous 5/16 in. thick plate (see Fig. 2). The face plates are fillet welded to a lattice work of channels and butt welded together at their edges to form a solid leak-proof surface. The large gate weighs 180,000 lb. and the small gate weighs 42,000 lb.

The three concrete piers supporting the ends of the gates are reinforced by four "I" beams and surmounted by weld fabricated pylons to facilitate the

lifting and lowering of the gates. These piers were constructed first and the gates fabricated in place.

Order of Erection and Welding

The supporting framework for the face of each gate was the first part of the gate erected. Following this the trusses on the back were erected and welded to the face framework. Large

jacks were used to support the overhanging weight of the gate trusses until they were securely welded into place. The 5/8 in. thick face plates were the last parts of the gates to be assembled and welded into place.

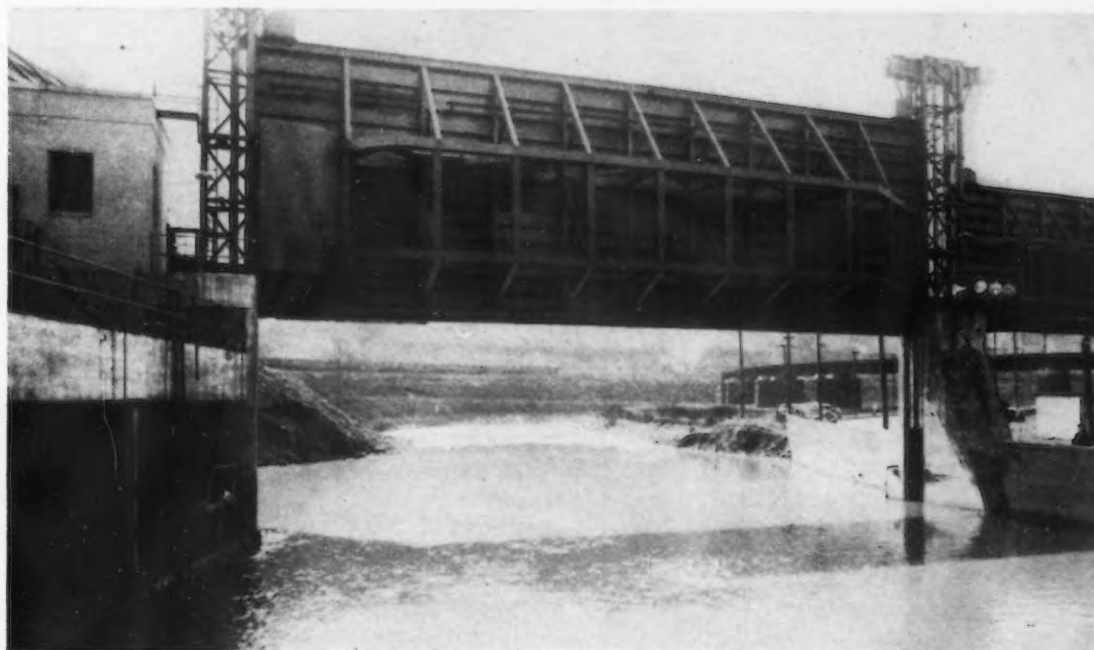
All material for the gates was cut to size before being shipped to the site.

(CONTINUED ON PAGE 93)



ABOVE
AT RIGHT
FIG. 3—Welding
5/16-in. plates on
to the face of a flood
gate.

AT RIGHT
FIG. 2—The large
flood gate weighs
180,000 lb. and the
small one, 42,000 lb.



Small G-E Foundry Doubles Output

VIRTUAL doubling of output, together with a marked lowering of foundry production costs has resulted from the modernization of the Ontario, Cal., works of the General Electric Co.

This foundry has been operated for more than 30 years, latterly as a branch of the G-E Bridgeport, Conn., works, which is largely devoted to the manufacture of electric household appliances. Over the years its produc-

tion facilities have been gradually improved, but the present layout represents improvement on a wholesale scale.

The main product is casting for electric flat irons. These vary in cross-section from $\frac{1}{4}$ to $1\frac{1}{2}$ in. and in weight from 1 to 5 lb., with a few castings, such as for tailor irons, weighing as much as 20 lb. There is no core work.

In 1933, when the present compre-

hensive improvements were begun, about 2400 tons of iron was being poured per year; in 1937 more than 4200 tons was poured.

Prior to 1934 one hand-charged 42-in. cupola was employed, and castings were cleaned by sand blast. Molds were made on jolt-squeeze machines and poured on the floor from hand ladles. There was in operation, however, a unique molding machine for producing gang molds. The latter,

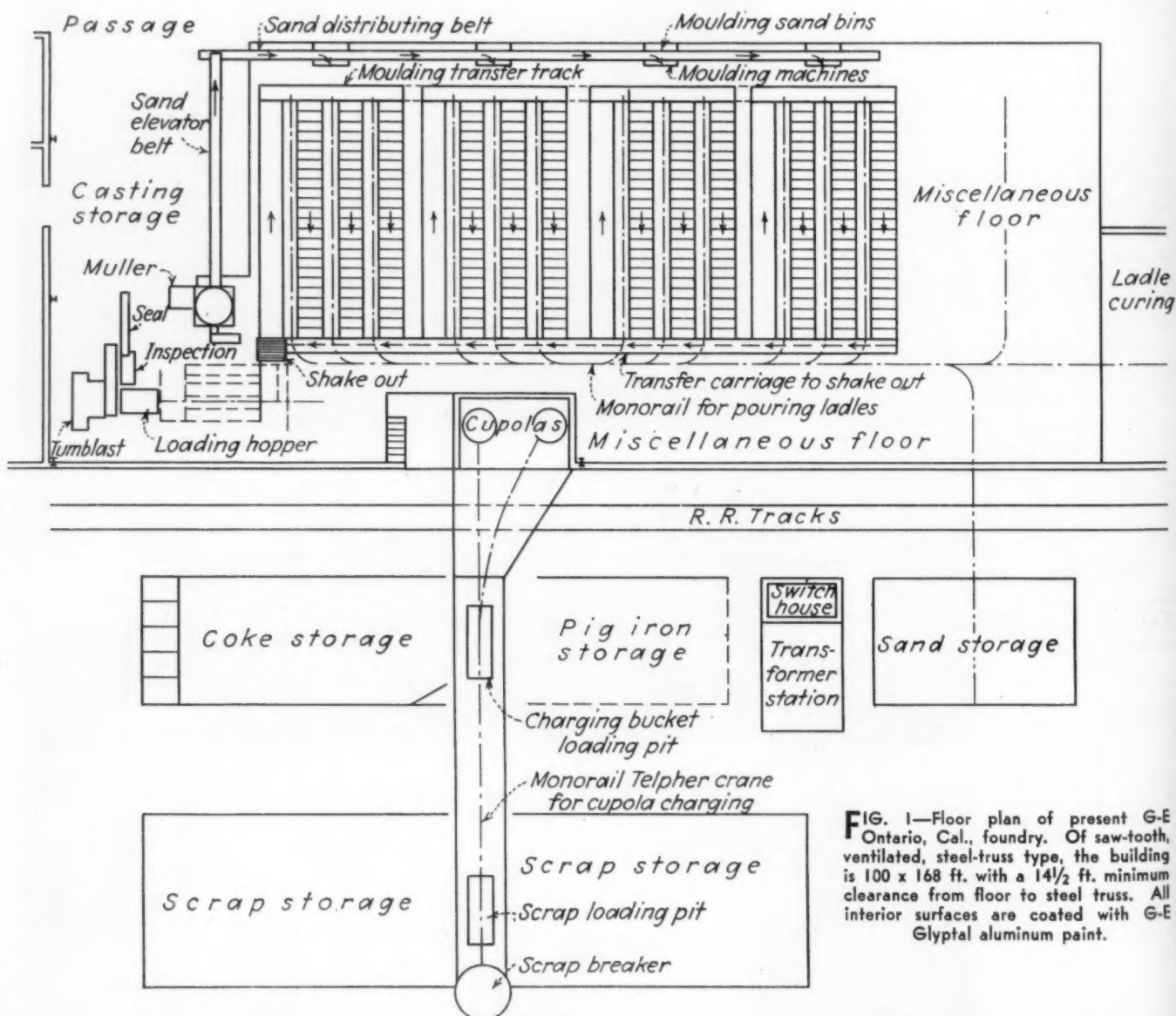


FIG. 1—Floor plan of present G-E Ontario, Cal., foundry. Of saw-tooth, ventilated, steel-truss type, the building is 100 x 168 ft. with a $14\frac{1}{2}$ ft. minimum clearance from floor to steel truss. All interior surfaces are coated with G-E Glyptal aluminum paint.

With New Equipment

By F. A. MAURER

General Electric Co., Ontario, Cal.

which permits pouring of 30 castings at one time, has been retained in the new set-up and its use extended, as outlined below.

Major items of new equipment include two twin, 42-in. cupolas, one a stand-by; cupola charging equipment; an airless steel abrasive machine for cleaning castings; new molding machines; and a complete sand handling system, including magnetic separator, sand mixing mill, conveyor

Since 1934 a very good cupola practice has been developed, with improvements in the iron, particularly in the direction of a denser structure that permits a better plated finish to be applied.

Cupola Charger Installed

The layout of the new foundry is shown in Fig. 1.

Among the first of the present equipment to be installed were the two

monorail 30 ft. above the ground, supported by a steel framework extending 100 ft. back from the cupolas. A scrap breaker is located at the extreme end of the monorail and cast iron scrap is piled under and at each side of the monorail as shown in Fig. 2. Between the scrap breaker and the cupolas is the charging pit. Into this pit the charging buckets, loaded at the scrap breakers with the approximate charge of purchased cast iron

FIG. 2—View of cupolas and charger. The cab of the charger is at the right, under the roof. The charging pit is at the right of the central roadway.



belts and storage bins. A new all-steel, saw-tooth type foundry building has replaced the former structure and a heavier monorail system has been provided for handling molten metal and transporting castings from molding floor to cleaning room. The handling of bull ladles has been changed from a two-man to a one-man job by mounting one end of the holding shank on wheels.

cupolas, which, with the framework, monorail, cab, electric hoist, and charging buckets for mechanical charger were transferred from the company's dismantled Elizabeth, N. J., foundry. The cupolas and charging apparatus are pictured in Fig. 2. The cupolas are standard 42-in. units. The monorail system is arranged to take metal from either cupola.

The mechanical charger runs on a

scrap, are lowered onto small cars designed to be pushed onto a platform scale. Here the charge is accurately made up of purchased scrap cast iron, shop returns, steel rail scrap and pig iron. Coke charges are also made up in the charging pit, and the proper amount of limestone and dolomite are added.

Materials are brought up to the pit on small cars that run on steel rails.

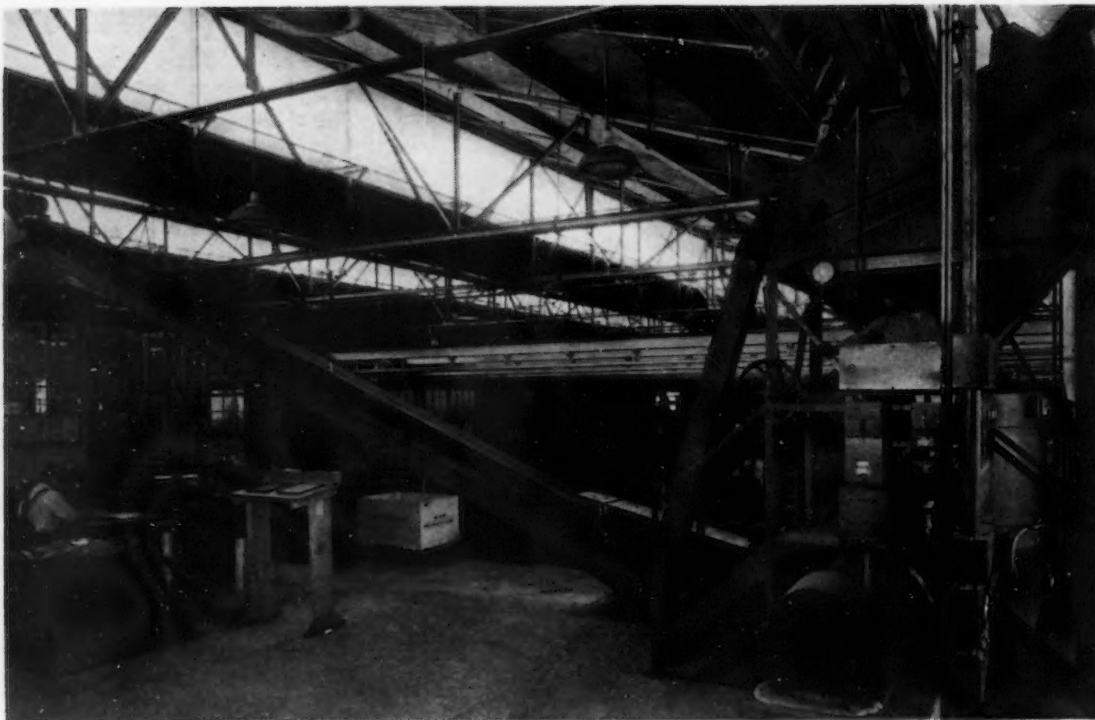


FIG. 3—Muller and belt for handling sand. A vibrating screen is mounted on top of the muller and a water meter is located under the screen. Control switches are on a panel at the front.

The loaded bucket is elevated by the hoisting mechanism on the front end of the mechanical charger to the level of the charging door, and then pushed forward into the cupola. Buckets are of conical bottom drop type.

Metal charges are 1000 lb., made up of only 22½ per cent pig iron.

Monotrack and switching gear are used throughout on the monorail pouring system. The Monotrack is of substantial proportions, and replaces

a "double head" system which was too light for present operations.

A main track runs east and west the full length of the building. From this, at right angles, run 12 pouring tracks for the molds grouped in frames and

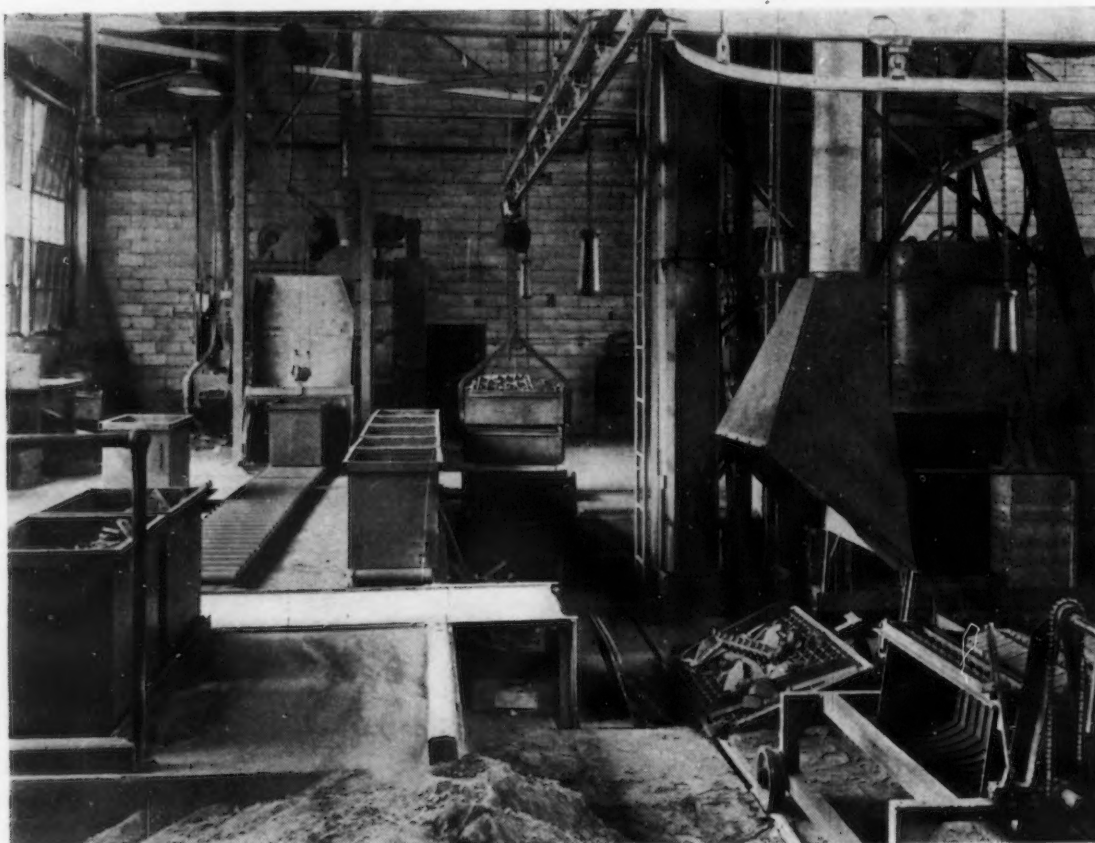


FIG. 4—Shakeout grate. Note grate tilted to dump castings into tote box below trap door. The carriage for bringing up frames of molds and dumping them is shown in the right foreground. The tote box, after being filled is raised by air hoist and rolled to a roller conveyor, then to the airless abrasive cleaning machine in the background.

poured at knee height; and one track, at the east end, for the bench made molds, poured at floor level. The ladles are suspended from the monorail by four wheel fixtures. A very flexible chain hoist is used to regulate their height for receiving and pouring metal.

Sand Handling System a Major Feature

Of outstanding interest, perhaps, in the new layout of this foundry are the sand handling system and the operation of the group molding equipment.

The sand handling system (Fig. 3) operates on the continuous principle, that is, there is little storage, the sand being made up into molds as fast as it is prepared in the muller.

The system comprises a mold shake-out grate with ventilating hood; a short conveyor belt under the shake-out grate which carries the sand over a magnetic separator and into a bucket elevator; a rubber-mounted vibrating single screen; and a storage bin to hold the sand. Also, a size 2 sand muller; a sand aerator; a 40-ft. long sand elevating conveyor having ball-bearing rollers and an 18-in. wide, 120-ft. long sand conveying belt (which also operates on ball-bearing rollers); and four storage bins, into any of which the sand may be diverted from the belt. A water meter on the muller regulates the amount of water added to each batch.

The sand handling system further includes a miniature track and carrier for transporting the castings from the pouring tracks to the shakeout station. The carrier is brought into position adjoining one of the pouring tracks, and a frame of molds, on its four-wheel mounting is rolled onto the carrier. The carrier is then pushed up to the shakeout station and the frame of molds is overturned by rotating the top table of the carrier on its mounting, whereupon the sand and castings spill out on the grate (Fig. 4). A blow with a sledge knocks the main sprue and gates from the castings and the sand falls through the grate to the belt below and over the magnetic separator.

When three frames of molds have been dumped, the sand is elevated into the storage bin, and dropped into the muller. Water is then added, and after being mixed for 5 min., the sand is elevated and distributed to the proper bin.

As previously mentioned a significant piece of equipment carried over to the new set-up is a machine by means of which 30 castings are

poured at one time. The molds are placed in a vertical position on a frame and held tightly together by pressure applied on end plates. The assembly resembles a plate and frame filter press. Patent U. S. 1,717,245, issued to W. C. Patterson, foundry foreman, taken out on this equipment,

machines having a 16-in. diameter air cylinder and a 30 x 70-in. table. Air at 50-lb. pressure is supplied by a compressor. One of the molding machines, with its sand bin and a pair of molds, is shown in Fig. 5. Molds are made two at a time, at the rate of 100 an hour. Since each mold makes



FIG. 5—Molding machine and sand bin. The pouring track with groups of molds is in the foreground; molds with Calrod inserts in place are shown on the shelf at the left.

has been assigned to the General Electric Co.

This process of group molding has been used for several years in producing a horseshoe shaped casting and for certain flat castings used as "pressure plates." With the installation of the sand handling system, however, the process has been extended to single-casting automatic sole-plates and sole-plates for non-automatic irons.

Molds for the grouping frames are made on four yoke-type jar squeezer

two castings, four castings are produced at each cycle of the molding machine.

Each of the four molding machines has four sets of tracks in front of it. Three are used to hold the groups of finished molds, waiting to be poured, while one track is used to hold the empty frames, awaiting filling of the flasks with sand. As the dumping of the previous day's production takes place, the frame of "empties" is pushed manually up the track to the molding station. As the molder fills a

frame, he pushes it away from him on to one of the pouring tracks, where it stays until poured.

In making the molds for automatic castings, one man operates the molding machine while a second man places the Calrod insert in a chill held

13. Lift molds off stripper plate, placing on stand to left.

Operations of the molder's helper are:

1. Raise two empty flasks from frame of "empties" to stand.
2. Place Calrod inserts in position, ends of inserts into holes in chill.

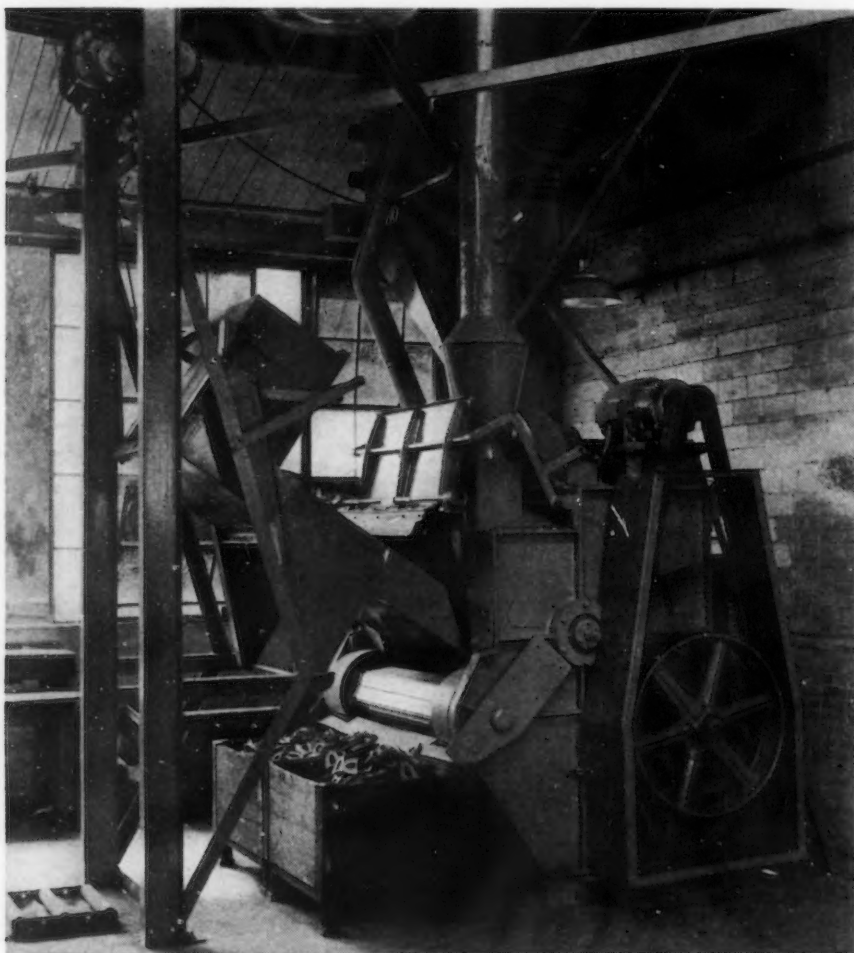


FIG. 6—Close-up of cleaning machine. In this view, the loading mechanism is discharging the contents of a tilted tote box into the machine.

in place in the sand. Operations of the machine operator are:

1. Lower stripper plate over pattern.
2. Place chills on draw pins on pattern.
3. Place flasks in position.
4. Drop sand filler plate in place.
5. Place spring gate for runner (gate to castings is part of pattern).
6. Pull in sand from bin and tuck around chills and gate.
7. Jolt twice or more and smooth sand back level with filler plate.
8. Squeeze at 50-60 lb. per sq. in. pressure.
9. Raise top filler plate, blow off mold around gates, pull spring gates.
10. Dust molds with Faceamol, opening suction vent to draw away excess dust.
11. Pull draw pins so chills will come free of mold.
12. Tilt stripper plate forward, lifting molds off patterns.

3. Blow off molds with air.
4. Remove the two molds from the stand and place on pouring track.
5. Screw up end plate on frame when filled with molds.

There are 21 men in the entire foundry crew, 18 of them on day shift. Each week they regularly make molds, place heating elements and pour metal for 28,000 electric irons. Metal melted has averaged around 30,000 lb. per day.

Castings Cleaned by Airless Abrasive Method

New equipment has also been installed for the cleaning of castings. The system includes steel tote boxes into which the castings are tilted off

the shakeout grate (Fig. 4); an air hoist for lifting boxes of castings from below the shakeout grate to the cleaning floor level; and a roller conveyor for transferring the full tote boxes to an airless abrasive cleaning machine (Fig. 6), and returning the empty tote boxes. Also, a shuttle track and cars at each end of the roller conveyor for transferring full boxes from the air hoist to the conveyor and returning empty boxes on the air hoist to below the shakeout grate; and an electrically-operated charging device which dumps a tote box of castings into the cleaning machine. The latter uses chilled shot which is projected at rifle bullet speed from slots in a rapidly revolving wheel. Powerful suction removes all dust, allowing more in the working quarters.

With the equipment above described we have materially reduced our cleaning costs and have removed hazards from silica dust.

In operation, the castings on top of the shakeout grate are tilted off the grate into a tote box below. When filled, the tote box is rolled onto the roller conveyor, taken to the cleaning section and then elevated by electric hoist and dumped into the cleaner. Starting the main drive puts the wheel of this cleaning machine into motion. Shot flows to the center of the wheel and is flung radially at high speed through vanes in the wheel, hitting the surface of the casting and knocking off all adhering sand. Loads of castings that formerly required 1 hr. for cleaning are now cleaned in 15 min. or less.

Close Technical Control

The foundry is well organized as to technical as well as personnel control. The technical control is the function of the engineering department, which is responsible for the correct materials being used, the correct iron being poured, and the proper sand being used under all conditions.

All materials are inspected as received. Chemical analysis is made weekly of the iron in castings; screen and clay analyses of the sand are also made weekly. Moisture, strength, and permeability tests are made every day. At least once a week a load of castings is tagged special and followed clear through the plating room and sometimes through assembly. Cast iron must be of such quality as to machine very freely, yet be dense, with the graphite in very small flakes to assure a smooth surface, free from porosity and "orange peel" effect, for plating.

Belt Wrappers for Wider Mills and Heavier Strip

BELT wrappers originally developed by the United Engineering & Foundry Co., Pittsburgh, for cold reduced tandem tin plate mills have been further developed for use in connection with wider mills and heavier strip. They are mechanical devices for starting the end of a strip coming from a delivery unit on to a tension reel without the necessity of entering the end of the strip into a gripper on the reel head.

On the tin plate mills a tonnage increase of some 15 per cent is attributed to the elimination of the necessity for slowing down or stopping the mill in order to enter the leading end of the strip in the reel gripper. The belt wrapper takes the strip at the threading speed of the mill and automatically wraps the leading end around the reel and establishes the tension. When the coil has been rolled and the reel head collapsed, there is no end sticking in the gripper to catch and hinder the stripping operation of the coil; furthermore the reel head can be rotated backward to further aid the stripping process.

Fig. I shows a dual belt wrapper developed for a 56-in., three-stand tandem cold mill. The mill finishes an average of No. 20-22 gage, up to 50 in. in width, and the reel is 30 in. in diameter. This unit is developed for a reel threading from the top in the conventional manner. The dual belt arrangement is for handling the heavier material and strip wider than about 38 in. In this view the two arms are dropped for clearance of the tension reel, being in this position when the

wrapper is retracted from the reel.

Fig. II, a side view of the same unit, shows the arrangement of the belt, tension spring, and the location of the motor which drives the unit into and out of position at the reel through a rack and pinion mounted in the framework and base slides. A third unit, similar to that shown in Figs. I and II, has been built for a 30 in. diameter reel to be used in connection with a three-stand 77 in. four-high cold mill.

An upside-down unit for a 24-in.

diameter reel that threads from the bottom is pictured in Fig. III. This unit is now in operation in connection with a 60-in. four-high temper pass mill in the Chicago district. The only difference between it and the unit pictured in Figs. I and II is the upside-down arrangement and the movement into and out of position at the reel, which in this case is obtained through use of an air cylinder similar to that used with the original wrapper for tin plate mills.

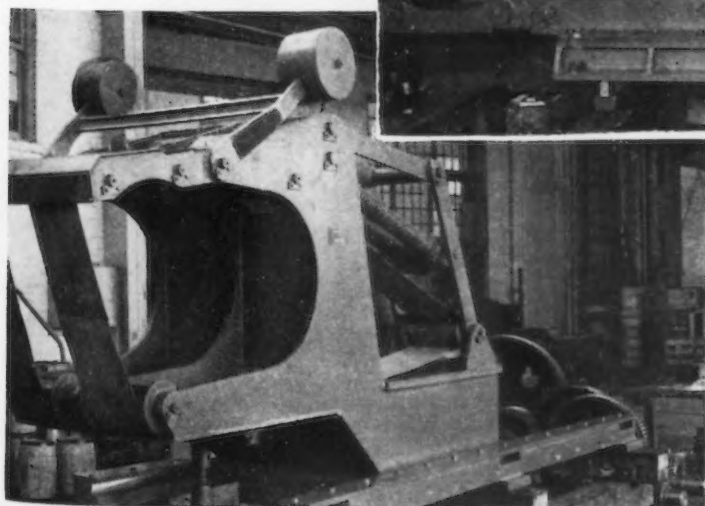
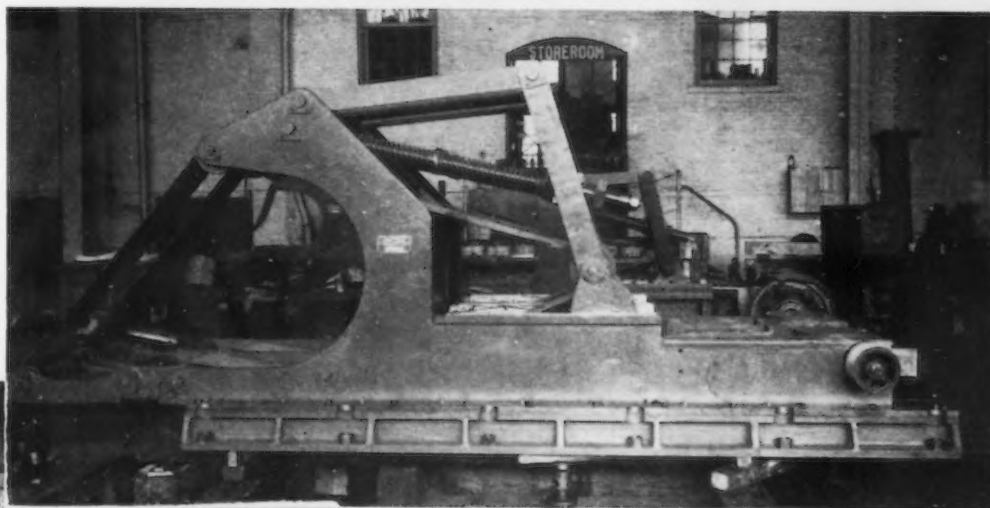
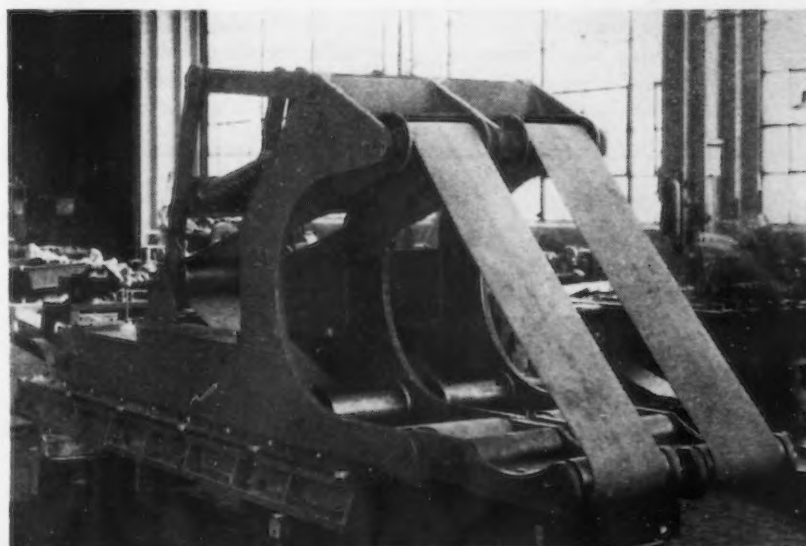


Fig. I

TOP—United dual belt wrapper for wide strip developed for a 56 in. three stand tandem cold mill.

Fig. II

ABOVE—Side view of the unit shown at top.

Fig. III

AT LEFT—An upside-down unit for a 24 in. diam. reel threading strip from the bottom instead of the top.

Recent Progress in Presses and

HIGH speed types of hydraulic presses are coming into wider use and several new models have been introduced to meet new needs. Mechanical types are tending toward fully enclosed drive mechanism in the crown. Some interesting portable equipment also has

been developed. Related equipment described includes two types of shears, a roll type of flanging and shearing machine, hydraulic table for shifting dies, cradle reel with self-feeding feature, a grinder for slitter knives, toggle clamps for sheet metal work, and a piercing die set.

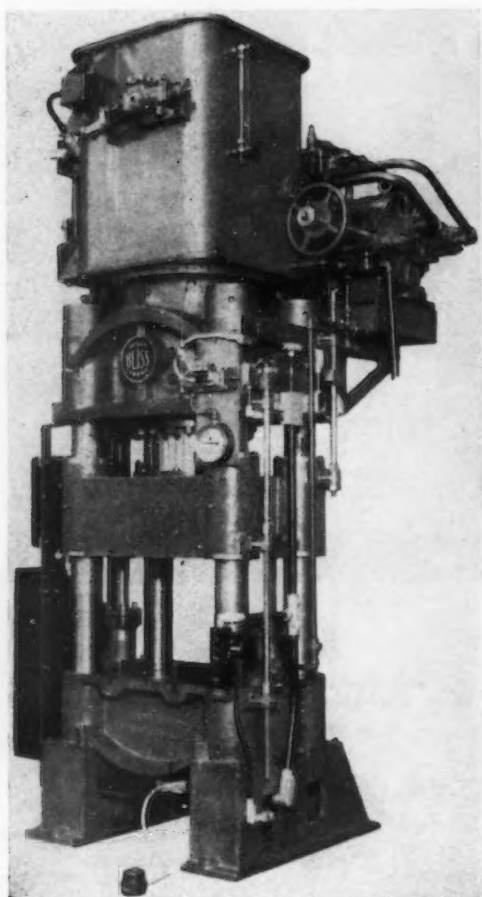
A NEW 350-ton Hydro-Dynamic single-action press of 12-in. stroke has recently been announced by the *E. W. Bliss Co.*, Brooklyn. It is of the open rod type with a moving down slide guided on all four rods by bronze bushings. The slide has a high speed approach to the work and automatically changes

to the pressing speed. Automatic reversal of the slide may be obtained either at a selected pressure or at a given distance. Simple adjustment provides for any stroke up to the full range.

The press is very rapid in its action, being equipped with an oversized prefill valve of quick-acting

type. When operating on short stroke, as in coining operations, 40 to 45 strokes per min. can be obtained. High hourly rates may be attained by equipping the press with an automatic feeding device for continuous operation. Like others of its kind, this machine is self-contained, with integral pumping system and all-electric control. It is possible to move the press as little as 1/16 in. when on inching control. Bed and slide areas are 30 in. square.

ANOTHER style of single acting hydraulic press is a 300-ton machine for metal stamping and forming, made by *A. B. Farquhar Co., Ltd.*, York, Pa. Bed dimensions are 56 x 76 in., daylight 48 in. and stroke is adjustable up to 24 in. Bed is designed to permit installation of hydropneumatic cushions. The slide is guided against steel housings by means



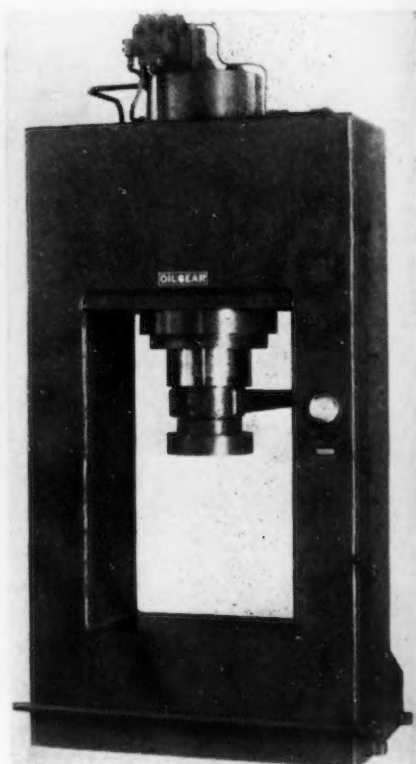
ABOVE

THE 300-ton Farquhar hydraulic press is fully automatic and is adaptable for stamping of automobile doors and aircraft parts.

o o o

AT LEFT

WHEN operating on short stroke, this Bliss 350-ton Hydro-Dynamic press can be speeded up to 45 strokes per min.



THE Oilgear 300-ton two-column speed press was designed for die straightening of malleable iron castings.

Sheet Metal Machinery

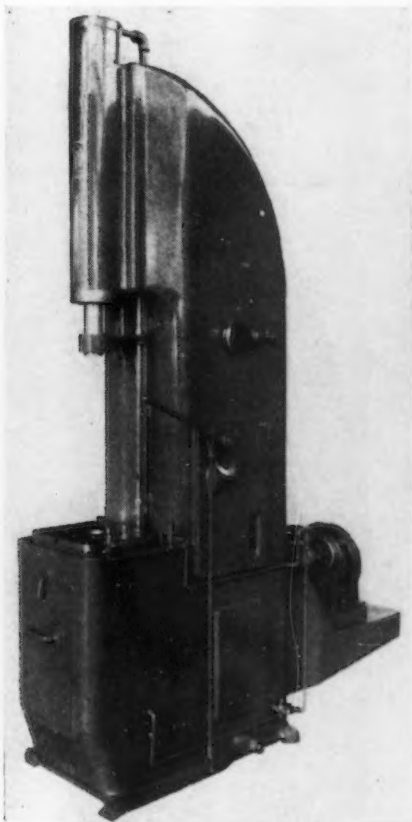
By FRANK J. OLIVER
Associate Editor, *The Iron Age*

of bronze lined guides. Tension is taken by four rods shrunk in position.

The rams are of the telescopic type, permitting fast approach under pressure up to 75 tons, and the speed is automatically reduced when the main rams are operating under pressure. All controls are of the push button type, and inching is available for die setting and tryout. All piping, the pumping unit and the 40-hp. motor are concealed. The oil reservoir is equipped with air and oil filters, as well as cooling coils, thermostatically controlled.

Straightening Press

ANOTHER hydraulic press of 300-ton capacity is one recently made by the *Oilgear Co.*, 1403 Bruce Street, Milwaukee, for straightening

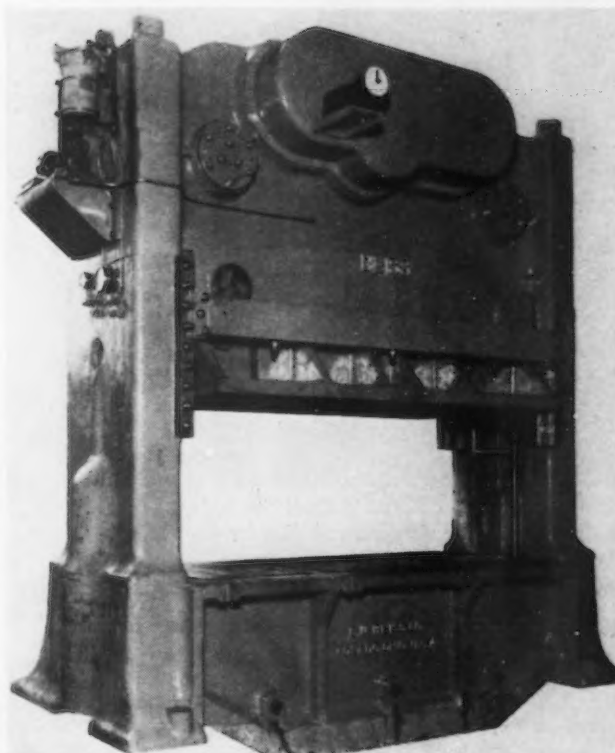


ABOVE

THE type V-2 American hydraulic press comes in sizes of 6 and 12-ton capacity and can be adapted for broaching as well as pressing.

AT RIGHT
ECCENTRICS cast integral with the bull gears actuate the slide movement of the new Bliss model 2E-7½, 108-in. press, with pneumatic cushion bed.

BELOW
AN electrically controlled, hydraulically operated friction clutch is a feature of the model 80D-66 straight-sided, double crank press made by the Cleveland Punch & Shear Works Co. Air cylinders for counter-balancing the slide are mounted in the uprights. Intermediate gearing and the flywheel are in the crown, which is of box-like construction.

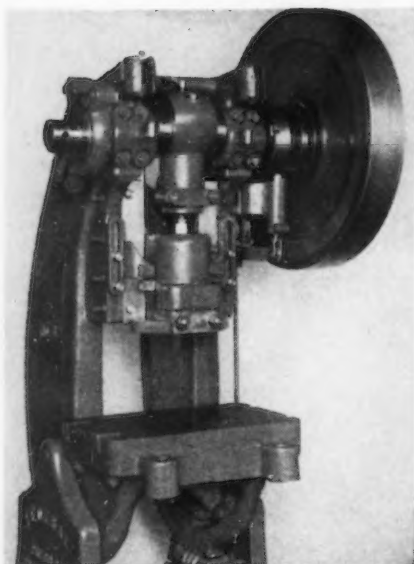


malleable iron castings under a die by a cushioned, compelling squeeze. Fluid power is supplied by a two-way variable delivery Oilgear pump connected to a 15-hp. motor. Rapid advance, slow pressure and unloading at a predetermined tonnage are incorporated in the control. The operator can inch, reverse or stop the ram by means of a single lever. The rapid traverse cylinder is built in the main piston and ram, and a surge valve, flanged integral with the main cylinder, provides free flow to the latter during the rapid traverse cycle. Cylinder is steel and of bottle shape.

The main press structure is of welded steel, forming a rigid box type structure with substantially ribbed base and yoke. Die space is 30 x 42 in., with 42 in. of daylight space. Stroke is 24 in.

Assembling and Broaching Presses

THE type V-2 American hydraulic presses are an improved line for pressing, broaching and assembly



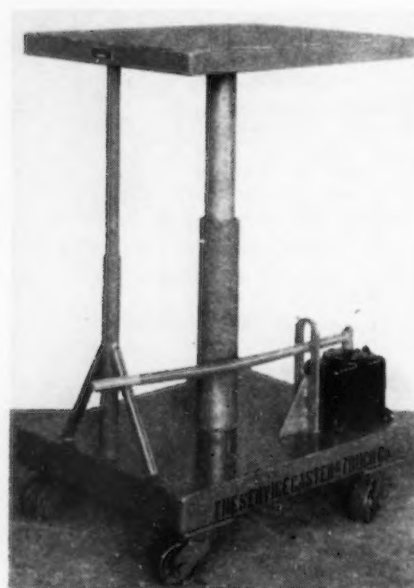
A MULTI-PIN clutch is being featured on all Federal presses. Larger capacity, better load distribution and faster action are stressed.

work, made by the *American Broach & Machine Co.*, of Ann Arbor, Mich., a division of the *Sundstrand Machine Tool Co.* Principal differences in design over older types are: work table

THIS light-weight portable pneumatic squeeze riveter for setting $\frac{1}{4}$ and $\frac{5}{16}$ -in. rivets cold is made by the Hanna Engineering Works, 1765 Elston Avenue, Chicago. A universal suspension bail permits using the riveter in any position. Operating valve is in the cylinder head. After completing the power stroke, the valve automatically returns the dies to the open position. Speed, 50 strokes per min.; weight, 100 lb. Yoke is designed to fit the job.



is cast integral with the column, making a more rigid construction, and the square work table has a steel top plate accurately finished for application of work holding fixtures for internal and external broaching. The hydraulic ram is hardened and ground and the lower end is threaded and counterbored. The hole is ground on



TO ease the job of installing dies in a press, the Service Caster & Truck Co., 511 N. Brownswood Avenue, Albion, Mich., is offering a hydraulically actuated die table in capacities of 500, 750 and 1000 lb. Platform is 30×24 in. Only 25 lb. pressure is needed on the pump handle. Hyatt bearings are used in the 4 in. wheels and the forged casters are made of 1045 steel, with double ball race in the yoke.

the diameter and the end for the accurate application of broach nose pieces and connecting head.

These V-2 vertical units are made in 6 and 12-ton sizes, with 26-in. stroke. Depth of throat from center of ram is $9\frac{1}{8}$ in. Hydraulic equipment is complete with submerged pump and flexible coupling for motor connection. A fan-type pressure gage is included.

Eccentric Type Press

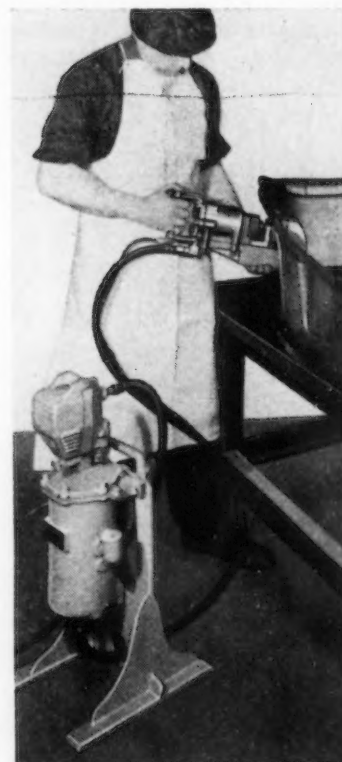
A NEW design of two-point suspension, single or double action press in which the motion for the slide is accomplished through full eccentrics cast integral with the bull gears is a product of the Toledo plant of the *E. W. Bliss Co.*, Brooklyn. The whole drive unit, consisting of eccentrics and herringbone gears and pinions, is totally enclosed in the crown.

A pump and filter provide cascade lubrication to gears and bearings.

To keep the lines smooth, the air counterbalance cylinders have been placed in the bed, with the rods running inside the uprights. Brake and clutch, which is a multiple disk fly-wheel type, together with the motor driven slide adjustment, are mounted at the rear to eliminate projections. An indicator on the crown tells the position of the eccentrics, and a scale on the right hand gib indicates the position of the slide. Adjustment of slide is 5 in., with 10 in. stroke. In the bed are three 24-in. diameter externally guided pneumatic cushions. Bolster is 60×108 in. and maximum die space is 30 in.

Multi-Pin Clutch

A NEW multi-pin clutch is now available for all sizes of presses made by the *Federal Press Co.*, Elkhart, Ind. By using eight pins located around the crankshaft, load is equally distributed and capacity is tripled over that of a single pin clutch. Practical-



THE portable hydraulic punch, made by the Progressive Welder Co., 737 Piquette Street, Detroit, will perform punching, notching or trimming operations on almost any shape of formed metal. Using a $1\frac{1}{2}$ -in. air-hydraulic booster with 90 lb. air pressure, the $2\frac{1}{2}$ in. piston will exert a pressure of 4300 lb. Weight of the punch itself is only $13\frac{3}{4}$ lb. Stroke is $\frac{1}{2}$ in. All punches are fitted to take standard punch and die sets.

ly instantaneous action is obtained. The pins engage openings in a hardened alloy steel plate attached to the flywheel. Either a close fitting face can be used for continuous roll feed jobs or one with backlash can be provided for testing dies. The pins are held in driving position by springs and are forced out of position by a sliding cam sleeve actuated through the tripping rod. Incorporated in the clutch is a positive single stroke tripping mechanism. Another feature is a safety device that will hold the clutch out of operation while setting dies, even when the treadle is depressed. The flywheel is mounted on Timken roller bearings.

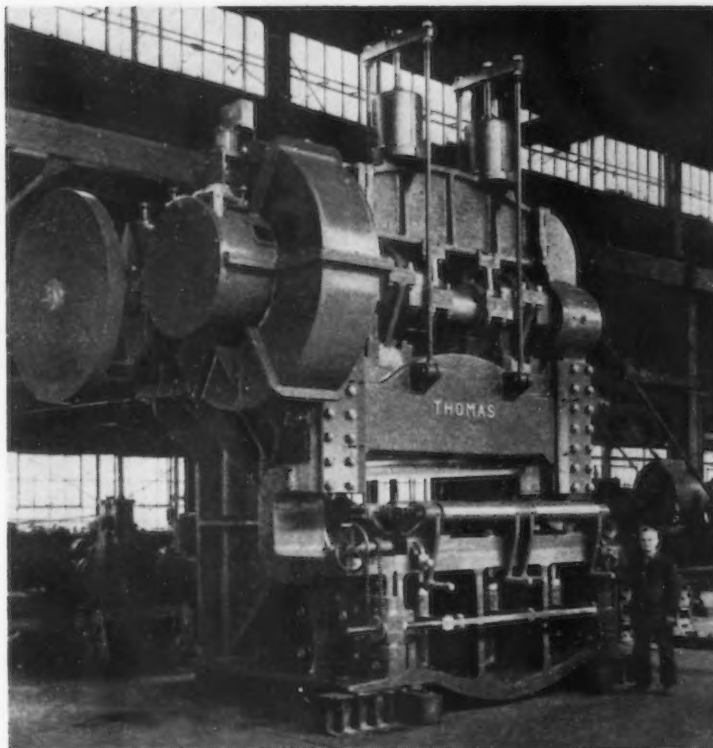
Stamping Trimming Machine

THE Quickwork Co., Chicago Daily News Building, Chicago, has developed a roll type machine for trimming, beading, flanging and forming of stampings. The contours of the revolving rolls are made to fit the

o o o

AT RIGHT
THE No. 22 Thomas plate shear was designed to cut aluminum alloy slabs up to 2 in. thick by 78 in. wide as the material comes from the mill.

o o o



AT RIGHT

AIR line pressure of 80 lb. per sq. in. can be raised to 400 lb. in this booster. Respective bores are 3 and 1½ in., stroke, 30 in. The equipment incorporates the T-J remote control valve system for controlling the reciprocation through buttons at each end of the large cylinder. At each stroke 5 cu. in. of high pressure air is discharged to the receiver. This is a product of the Tomkins-Johnson Co., Jackson, Mich.



o o o

BELOW

TRIMMING, beading, flanging and forming of stampings may be performed on the Quickwork machine.



stamping. The small roll or cutter has horizontal adjustment in relation to the large roll by means of an air cylinder, operated by a foot valve. The large roll has vertical adjustment. Both revolve continuously. The gage range of machines made to date is from No. 24 to No. 12, and some of the work has measured up to 7 ft. The table size is governed by the size of the stamping to be handled. The base of the machine is constructed of welded steel and the upper housing is a semi-steel casting. Anti-friction bearings are used throughout.

Shear for Aluminum Slabs

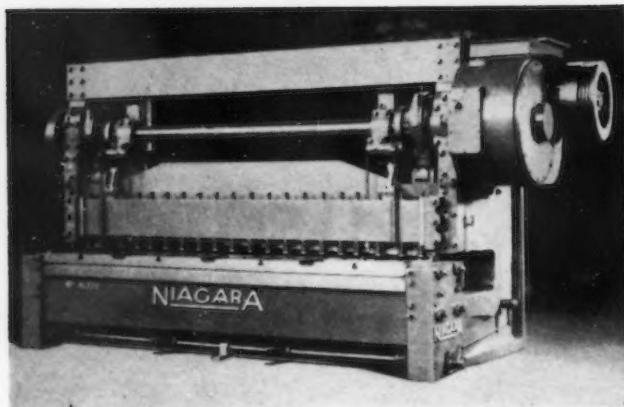
THE No. 22 plate shear made by the Thomas Machine Mfg. Co., Pittsburgh, was designed specifically for the shearing of aluminum alloy slabs up to 2 in. thick and 78 in. wide. A 12-in. stroke allows ample opening under the upper knife to clear curled material coming through over the tables. The lower knife has a special

arrangement to adjust for different thicknesses of slab. With aluminum alloys, a cleaner cut is obtained by separating the knives, the amount being proportional to the thickness of the material. A handwheel gives this adjustment.

Gears are herringbone and are completely enclosed in a welded steel case. All drive shafts are mounted on Timken bearings. Flywheel is a solid rolled steel section with hubs welded on. Main frame members are cast steel. Ram is counterbalanced by air cylinders, and the clutch is air controlled through an electrically operated valve.

Slitter Knife Grinder

A MACHINE for grinding circular slitting knives and all circular disks, either solid or split, from 2 to 20 in. in diameter is being offered by Samuel C. Rogers & Co., 191 Dutton Avenue, Buffalo. This style CC-3 knife grinder will take care of single



AT LEFT

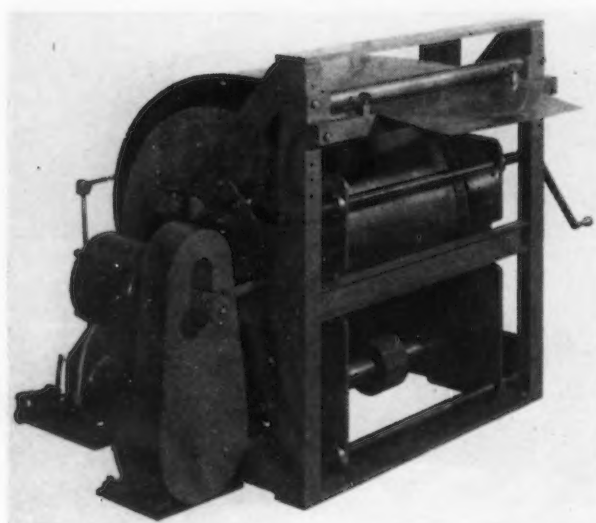
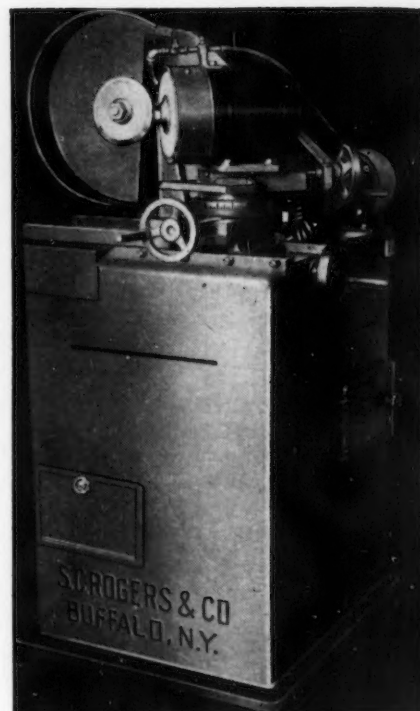
THE series KL power squaring shears announced by the Niagara Machine & Tool Works, Buffalo, are built in 6, 8, 10½ and 12-ft. lengths for flat shearing of ¾ in. steel and in 14 and 16-ft. lengths for ¼ in. steel. Triangular section crossheads with low slope, box section bed, enclosed drive with gears mounted on anti-friction bearings, 14-point engagement clutch, self-measuring parallel back gage with ball bearings, and alloy steel knives are some of the features.

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AT RIGHT

THE Rogers style CC-3 knife grinder is suitable for slitter knives and circular disks up to 20 in. diameter.

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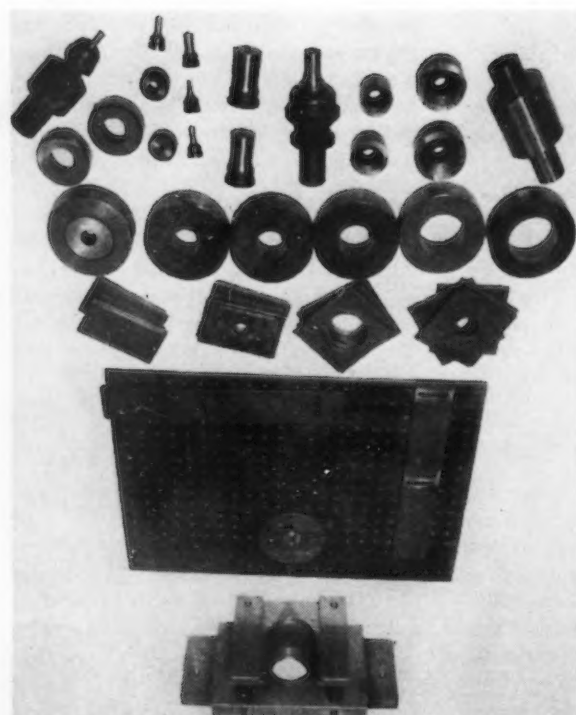
FOR accurate feeding of stock for presses, it is essential that the stock be taken from a loop and not directly from a coil. This variable-speed cradle reel, designed by the F. J. Littell Machine Co., 4151 Ravenswood Avenue, Chicago, unwinds a loop the size of which is controlled by a roller control arm, which stops and starts the motor. For proper speed control, the motor seldom stops, however. The side plates revolve so as not to curl the stock. Coils up to 3000 lb., 30 in. wide can be handled.

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AT LEFT

MODEL A Semco universal piercing die set is shown with a standard gage table.

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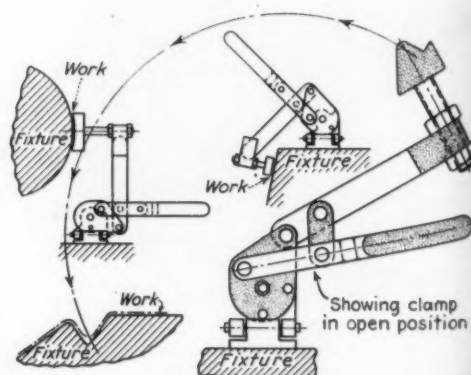
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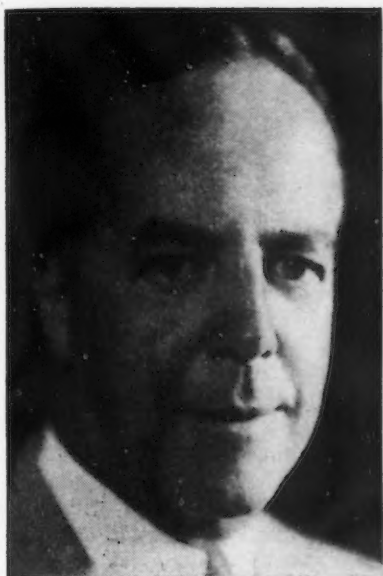
THE Knu-Sine universal toggle clamps afford a convenient method of locating production parts in jigs, fixtures and dies, in sheet metal, welding and die work. The sketch shows several forms and their application. All pivoted points rotate within hardened steel bushings, assuring long life. These are made by Knu-Vise Products Co., 6432 Cass Avenue, Detroit.

or double bevel or flat face disks. Two 1/3-hp. motors are provided, on one of which the grinding wheel is mounted directly; the other is for driving the work spindle through V-belt with variable pitch sheaves. A triple slide permits universal adjustment, and a graduated scale aids in accurate setting of angles. The work drive motor also drives the centrifugal coolant pump. Suitable splash guards are provided for wet grinding.

Universal Piercing Dies

A GROUP of standard Semco universal piercing die sets, made by the Service Machine Co., 754 Broadway, Elizabeth, N. J., includes three styles intended for single hole piercing in large sheets or small parts. Model A will take any punch size from ⅛ to 3½ in. in diameter; model B, from ⅛ to 2¼ in.; and model C, from ⅛ to 9/16 in. or from ¼ to ¾ in.





RIGHT

W. F. Detwiler will be chairman of Allegheny Ludlum Steel Corp.

LEFT

H. G. Batcheller will be president of Allegheny Ludlum Steel Corp.



W. F. Detwiler to be Chairman and H. G. Batcheller President of Allegheny Ludlum Steel Corp.

ACCORDING to official announcement, W. F. Detwiler, president of Allegheny Steel Co., will be chairman of the board of the Allegheny Ludlum Steel Corp., now in process of being formed by merger, and Hiland G. Batcheller, president of Ludlum Steel Co., will be president of the new company.

There will be eight vice-presidents as follows: V. B. Browne, James O. Carr, E. B. Cleborne, A. F. Dohn, W. A. Givens, Lewis W. Hicks, Frank B. Lounsberry and F. H. Stephens. Mr. Stephens will also be treasurer and E. J. Hanley will be secretary. A. W. Mace will be assistant secretary and assistant treasurer.

The chairman, president and eight vice-presidents will be members of a board of directors consisting of 19 persons, the other board members to be as follows: James C. Brady, Arthur E. Braun, William C. Kirkpatrick, Malcolm W. Leech, Frederick McDonald, William M. McKelvy, W. E. Ruder, Neile F. Towner and S. L. Whitestone.

Mr. Detwiler began with the Allegheny Steel Co. in 1909 after serving an apprenticeship in electrical engineering at the East Pittsburgh plant of the Westinghouse Electric & Mfg. Co. His first job with Allegheny was as time card employee, but he rose rapidly to executive positions, having become plant manager in 1919,

general manager in 1928, vice-president in 1931, executive vice-president and director in 1934 and president in April, 1937.

Mr. Batcheller began his steel career as a salesman for the Waverly warehouse of the Carnegie Steel Co. in 1909. He later became a mill salesman. In 1915 he was made assistant to the president of Ludlum and was elected vice-president three years later. In 1925 he became executive vice-president and was elected president in December, 1930.

Common Shares to Total 1,250,896

The authorized capital stock of Allegheny Ludlum Steel Corp. will be the same as the present authorized capital stock of Allegheny Steel Co. (850,000 shares) plus the present outstanding capital stock of Ludlum Steel Co. (500,000 shares). As of Aug. 10, 1938, the outstanding common stock capitalization of the merged company, excluding treasury shares, will be 1,250,896 shares, representing the sum of 752,696 shares of Allegheny common now outstanding and 498,200 shares of Ludlum common now outstanding. The authorized common stock capitalization will be 1,350,000 shares, of which 5789 shares will be reacquired treasury shares and 93,315 authorized and unissued shares for the account of the merged company. The 33,426 issued shares of \$100 par value preferred stock of Alle-

gheny Steel Co. will continue as a part of the total capitalization of the Allegheny Ludlum Steel Corp.

Upon the effective date of the merger, the holders of shares of the common stocks of Ludlum and Allegheny will be entitled to receive one share of common for each share already held in either or both companies.

Total Assets \$31,815,060

Based on the consolidated balance sheets of both companies as of Dec. 31, 1937, and without reflecting any changes which may have occurred since that date, the merger will result in an organization with fixed assets, after depreciation, of \$17,790,519, and with total assets of \$31,815,060. Combined current assets of \$13,218,516, would compare with combined current liabilities of \$3,186,506, indicating a working capital of about \$10,032,010.

Net sales of Allegheny Steel Co. in 1937 were \$36,573,419, and those of Ludlum \$13,054,202. Allegheny's net profit was \$1,813,707, equal to \$2.10 a share on its common stock, and Ludlum's net profit was \$1,120,422, equal to \$2.25 a share on its common stock.

For the four months ended April 30, 1938, Allegheny showed a net loss estimated at \$346,111, while Ludlum showed an estimated net loss of \$139,195.

...THIS WEEK ON THE

... Production to continue during summer ... Sales and assemblies show unexpected gains ... Steel outlook in automotive field not greatly improved ... Auto show space drawing recognizes Buick's strong position.

DETROIT.—Assurance came during the last week that automobile builders will continue to operate their plants during the summer months. Along with this came an increase in production and brighter sales reports from the field that persuaded at least two manufacturers to increase their scheduled output. At the same time optimism for next fall's prospects was indicated when manufacturers put in their bids for more display space at the National Auto Show than will be available.

As more factual light is thrown on the industry's summer plans it becomes quite clear that the seasonal slump will not be as severe as anticipated, nor will it be as complete and as devastating as published statements and public utterance have declared. Patently erroneous stories which have been current have declared that the whole industry would lapse into stagnation for two months.

Actually only three weeks' shutdown in many plants is anticipated. Ford will end car assemblies July 22 to reopen Aug. 15. Chrysler lines will stop running a day earlier and will reopen also on Aug. 15 with full operation of the line assured by Sept. 1. A Chevrolet shutdown about June 30 will be only partial, affecting passenger car assemblies while work on trucks will continue.

Chrysler's president, K. T. Keller, answered the rumor mongers the other day when he announced that he expected the corporation's plants to operate on an increased schedule during most of July, and that the time required for changeovers from current models would not differ greatly from what it has been in recent years.

"While business is on a substantially lower level than it was a year ago," Keller's statement said, "sales of our lowest priced car are taking an increasingly prominent part in what business is available.

"As a matter of fact, the order situation is such that it was decided Wednesday to increase the production already scheduled for this month and next."

Production to Continue

Chrysler and Chevrolet, which a week ago gave verbal assurance of continued activity, are the only ones that have made statements of any kind. But within the last fortnight investigation has brought out conclusive evidence that, barring an unforeseen change, the industry will resist the downward trend during the rest of June and, for the most part, entirely through July.

Packard is another which has shown signs of continuing production through the hot months. Originally set to wind up the season on June 20, this company made new plans almost overnight and decided to produce through all of July.

Reliable data about Ford show that its schedule promises continuation of engine manufacturing into August. As far as is known, this is the first definite information on Ford's program. Apparently the latter part of the engine run will be used for trucks or 1939 models, since the 1938 passenger car line will not be operating.

This leaves Ford with something like 110,000 engines to build to attain the 500,000 goal which was still considered desirable a few weeks ago for the 1938 model year. About 85,000 of the remaining total will be passenger car power plants; the rest are for commercial cars and trucks. In round numbers, the projected schedule for June is 40,000, tapering to 25,000 in July and 15,000 in August which would total only 80,000, instead of 110,000, but if retail sales show strength, output can be speeded because the advance schedule assures enough parts.

After the holiday lag production jumped sharply in the past week to

40,175 units, compared with 26,980 the previous week and 118,798 units a year ago, according to Ward's Automotive Reports. The advance was attributable to Ford's reopening after a week's shutdown and to increases in Chrysler and General Motors, plus resumption of assembly operations at Graham and White Motors.

Greater volume than anticipated in May production has caused Ward's service to revise earlier estimates upward from 195,000 to 204,000. Also due to the improved sales and production scores in June, Ward's has increased its June estimate from 155,000 units to 170,000.

Steel Outlook Still Poor

The outlook for steel is not considerably altered by these facts. As far as can be learned, the Fisher 1938 inventories are still sizable. In fact, no hint of 1939 buying has come yet from this direction, although ordinarily June is the month to buy, July the time to build the first bodies for the new models, and August the time to start assembling dealer cars. Packard definitely will not buy quantities of steel for months yet. Some steel bought last April and May by this company, and more bought in the fall, has not been released from the mills yet.

However, Plymouth steel has been exhausted, to the point where Briggs has found it necessary to use Dodge-bought steel to build the bodies for Plymouth Roadking models. Continued success of this line, which has moved well in dealers' hands, will eat up the extra supply of steel lying at Dodge. The fact that Plymouth and Dodge bodies are nearly identical makes the substitution possible. It remains, however, that Plymouth dies will be ready at the Briggs plant early in August, and in September the new models should begin to roll off the line. The conclusion is that some sizes (for fenders, hood, and other front end parts which are being changed) may be bought in July at Briggs for Plymouth.

It is doubtful whether Ford model changes will be carried out along lines originally outlined in these pages. What appeared to be a temporary slowing up in the Model 92 program (light car with integral frame and body) now takes on a permanent aspect, with some equipment orders reported definitely cancelled. If not, and if Ford continues the present models with only

ASSEMBLY LINE...

By W. F. SHERMAN

Detroit Editor

minor changes, steel buying by the Ford organization still is problematical. Ford's own steel plant has been inactive for weeks.

No Postponement of Show

When the Automobile Manufacturers Association held its annual meeting in Detroit last Thursday it settled with finality all rumors that the national show might be postponed until after Jan. 1. Besides that, it gave a measure of the spirit of the industry (member companies asked for 8600 sq. ft. of space over and above that available in New York's Grand Central Palace) and also gave to Buick a spotlight position in the exhibit. Since space choice is awarded in the order of dollar volume of sales for the 12 months preceding May 1, Buick, which was third, followed Chevrolet and Plymouth in choosing its location on the floor. Ford, not a member of the A.M.A., did not participate in the drawing.

Renewed expression of the opinion that saturation has been reached in the number of automobiles is refuted by data uncovered by the A.M.A. Examination of the public's purchasing habits, coupled with evidence on the steadily increasing use being given motor vehicles, indicates that the saturation point is far away.

By the end of 1937, the year during which production and sales came nearest pre-depression levels, the 26,500,000 automobiles and trucks then in use were older on the average and were being driven harder and longer than the cars in use at any other time of comparable business conditions since the War. The rate at which cars were replaced in 1936 and 1937, when related to the number and rate of use of vehicles in operation at the beginning of each year, was still below pre-depression standards. Failure to replace cars during the "bad years" resulted in the public driving (in 1937) a higher proportion of cars seven years old, or older, than in any year prior to 1930.

Motor News in Brief

The channel around the ventilator on new Packards is being tinned before paint is applied to protect this vulnerable point against rust. * * * A four-cylinder engine again powered the winner of the Indianapolis Speedway classic, and also took second, third, fifth, sixth, eighth, ninth and tenth places. * * * To prove that sales could

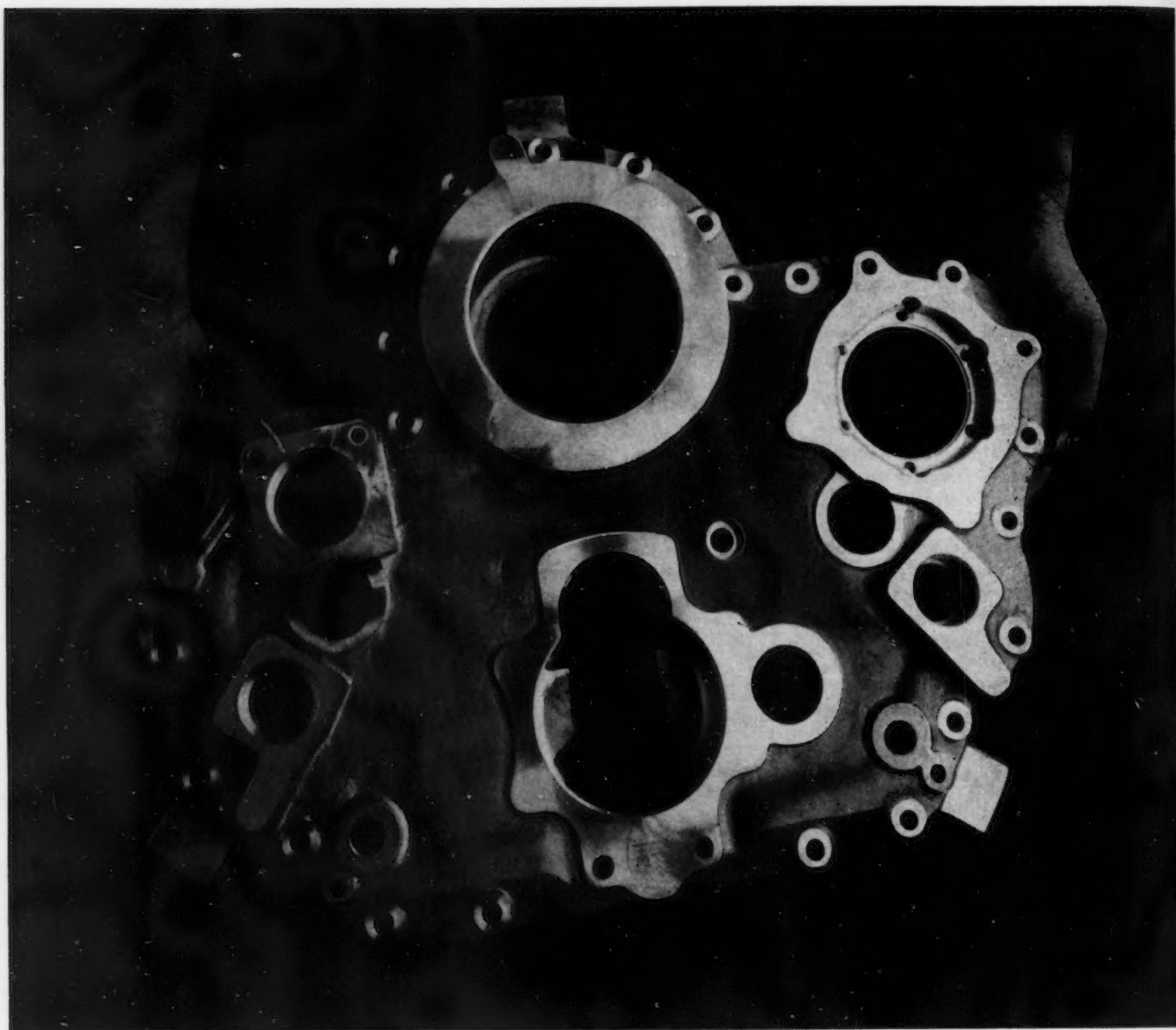
be made during depression, George W. Mason, president of Nash-Kelvinator Corp., and his executive staff of 45 men rang doorbells in Lincoln, Neb., a few weeks ago—and sold some of their own products. Mason has launched a "National Salesmen's Crusade." * * * Oldsmobile camshafts are copper-plated to insure lubrication during the run-in period. This is similar to the tin-plating given pistons by many manufacturers for the same purpose. * * * Rust-resistant square mesh stock is used to make an "invisible" bug screen to be installed between the radiator core and grille. * * * Engineers are looking with interest at new auto lights made of plastic, lens and all. There are only two pieces, including the bracket. * * * Willys-Overland shows a strong financial position despite losses totaling \$188,222 during the last six months; assets are three and three-

tenths times the liabilities. * * * Auto parts suppliers, having built up banks of parts sufficient to complete the model year, are entering a dull period that will end shortly before new models go into production. * * * Diversification of products is proving beneficial to many parts plants. Electric Auto-Lite Co., Toledo, largest independent maker of starting, lighting and electrical equipment for motor cars is probably the leader in this endeavor, with more than 100 products ranging from stainless steel kitchenware to artificial leather goods. * * * Offsetting the seasonal demand for its gas-fired domestic heating equipment, the Surface Combustion Corp. has developed a new air-conditioning system which depends upon a chemical drying of air as controlling factor. The new product is called Kathabar and is derived from lithium chloride.

THE BULL OF THE WOODS

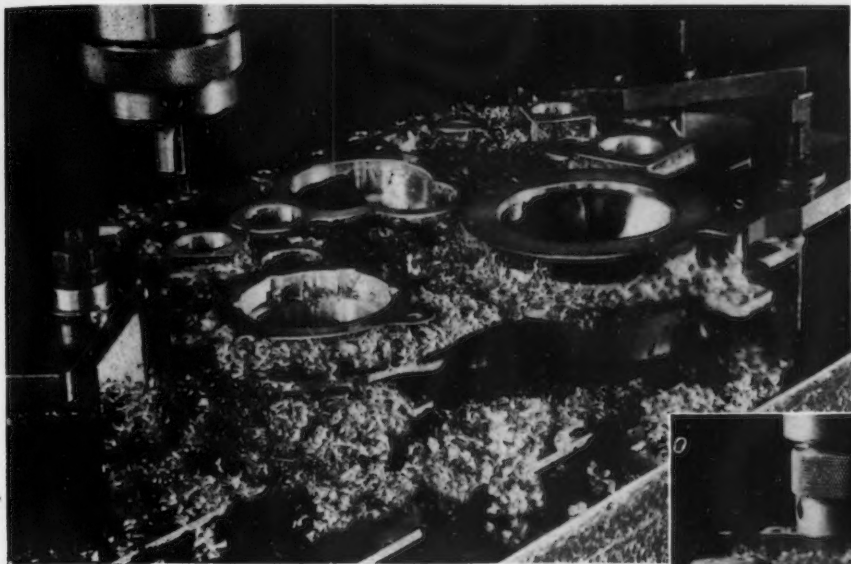
BY J. R. WILLIAMS





Presenting Accuracy from a Pratt & Whitney Jig Borer

The piece is an experimental engine part. Tolerances were close, and the various flat surfaces had to be faced in exact relationship to each other. By using a Pratt & Whitney No. 2A Jig Borer for all machining operations, a far more accurately finished product was obtained *and the estimated saving was 30%.*



All machining operations on this aluminum casting were done with a Pratt & Whitney No. 2A Jig Borer. This included drilling, reaming, precision boring and counterboring the holes, facing the flat surfaces and milling the edges. The only time the position of the piece on the table was changed during these operations was to turn it over for machining the opposite side. The picture at the left shows one of the counterboring operations. The picture below shows the edges being milled.

"Production Profits Hinge on Precision"

THIS PIECE is typical of Pratt & Whitney Jig Borer applications as a tool room manufacturing machine. Manufacturers with well-equipped tool rooms everywhere are realizing huge savings by utilizing this machine for many of their small lot production and experimental model jobs, in addition to the regular run of jig and fixture work. Rather than build up special tooling for small lot manufacturing, the work itself often can be done completely on a P&W Jig Borer.

The machine is capable of a wide variety of drilling, reaming, boring, facing and chamfering operations, all with the fine accuracy characteristic of Jig Borer practice. In addition to this versatility, P&W Jig Borers have speed and ease of operation—accuracy to "tenths" in the work they produce—an open-side construction that gives the operator a chance to watch the progress of his work, simplifies the setup and provides a wider range of rotary table applications—and many other features that have made the P&W Jig Borer a favorite in tool rooms everywhere.

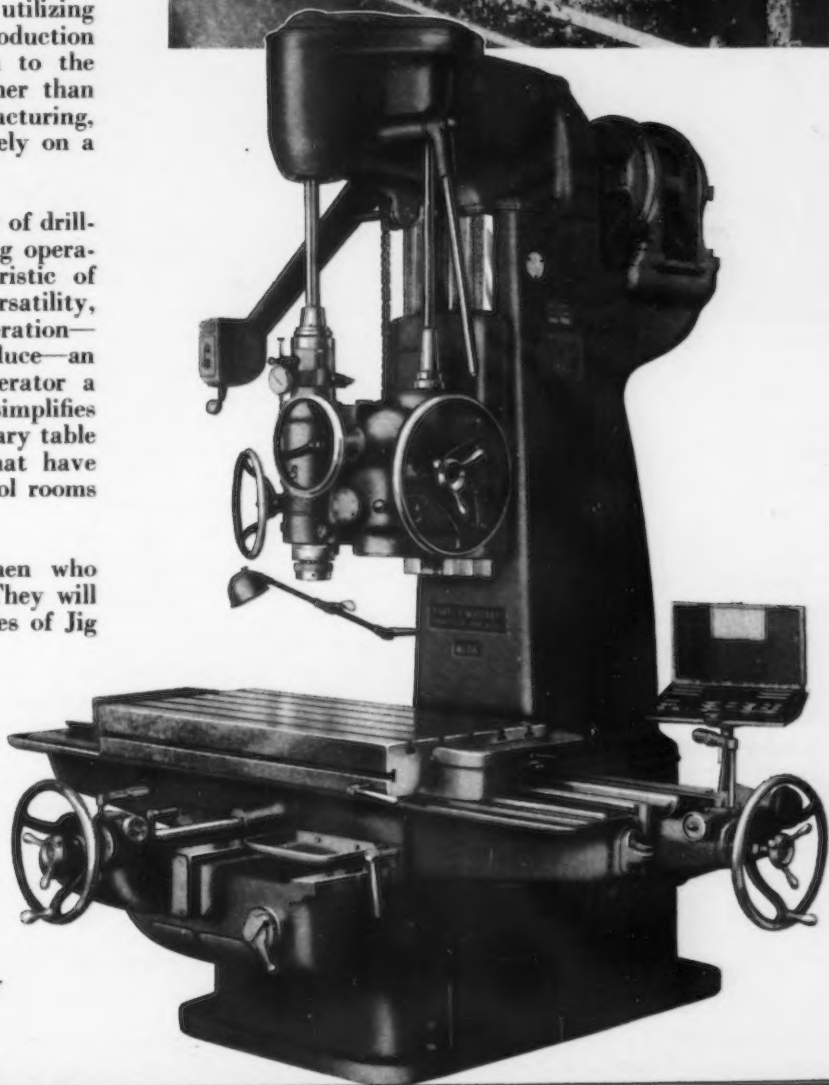
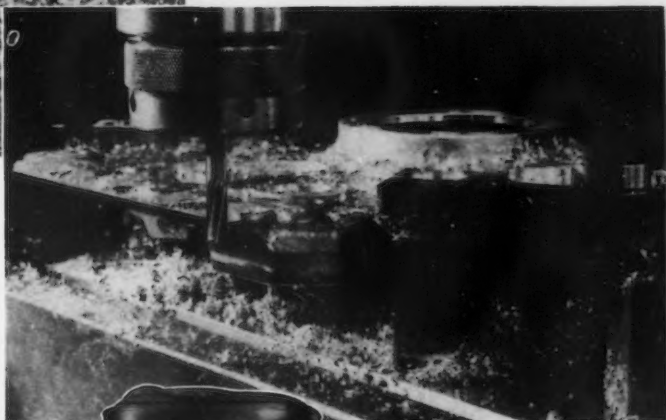
Our representatives are experienced men who know Jig Borers and what they will do. They will be glad to discuss with you the possibilities of Jig Borer applications in your own tool room.



Pratt & Whitney

DIVISION NILES-BEMENT-POND COMPANY

HARTFORD • CONNECTICUT



THIS WEEK IN WASHINGTON

... Maritime Commission to award 21 more cargo ships within next six months, taking 78,000 tons of steel ... Monopoly investigation ordered by Congress to get under way soon.

By L. W. MOFFETT
Resident Washington Editor
The Iron Age

o o o

WASHINGTON.—Maritime Commission officials estimated this week that close to 78,000 tons of steel will be required for 21 ships they expect to contract for within the next six months.

The types of vessels included in this six-month program and the approximate steel tonnage requirements for each classification, as given to THE IRON AGE, follow:

Type	Tons of Steel
6 C-3 steel cargo ships	26,220
4 Export vessels	16,560
4 Vessels for Mississippi shipping...	16,560
7 C-1 steel cargo ships	18,550
Total	77,890

This program is expected to cost \$67,680,000. A tentative program for building 24 vessels to cost \$100,000,000 for service in Pacific Coast shipping was expected to get under way before the end of 1938 but the latest word is that plans are still in the blueprint stage and contracts cannot be awarded until next year. The program will not reach its peak until some time during the next two years, officials said.

The Program Thus Far

Summarized, the commission's program to date shapes up like this:

Number of ships under construction

or contracted for—29; estimated dollar volume of business placed to date—\$86,320,000. Officials estimate the steel requirements of ships under construction or already contracted for as follows:

Type	Tons of Steel
1 super-liner	13,800
12 Tankers	61,680
16 C-2 steel cargo ships	57,600
Total	133,080

This brings to 210,970 tons the total steel requirements of ships being built or to be contracted for this year under the Maritime Commission's program.

The present long-range plans of the commission are to build for what it describes as the country's "minimum needs." A survey of these requirements, including the national defense factor, indicates that "minimum needs" call for 500 new ships to cost \$1,250,000,000 and to be constructed over the next 10 years.

"As the commission's construction program expands and the new Navy building program gets under way," says Admiral Land, commission chairman, "it is obvious that present shipbuilding facilities will probably be taxed beyond capacity and that some rehabilitation and some expansion will be necessary to accommodate this tremendous volume of new building. But the situation does not justify any 'gold rush' for the shipyards."

The Navy Program

Under the Navy's \$1,090,656,000 expansion program approved by President Roosevelt on May 17, the estimated plain steel requirements for two battleships and nine other vessels, for

which the House Appropriations Committee has approved a \$16,050,000 deficiency appropriation measure, is 37,468 tons.

This excludes the seven subchasers and small torpedo boats which also are included under the appropriation bill but for which the steel requirements will not be large.

Present plans call for beginning construction of the two 35,000-ton battleships soon after July 1 with the two cruisers to be started early in 1939. Money for starting an aircraft carrier, two small seaplane tenders and another mine layer had originally been asked but the Navy Department withdrew its request, explaining that plans had not been completed. Rear Admiral Ben Morrell, chief of the Bureau of Yards and Docks, told a House subcommittee that "due to lack of adequate facilities, the shipbuilding program has been retarded and the delivery of ships is not keeping pace with the anticipated program."

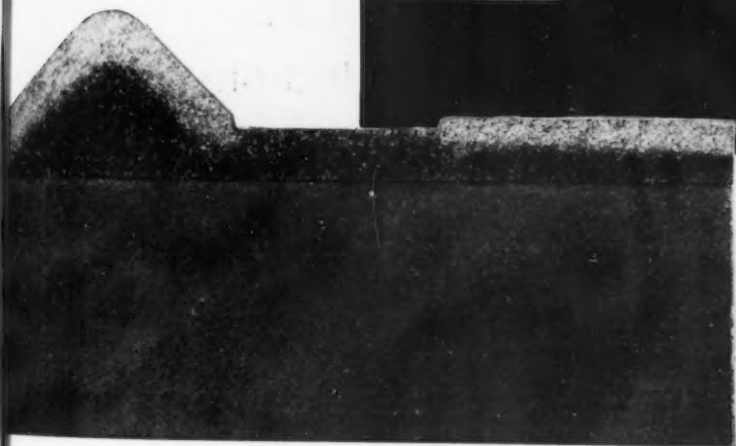
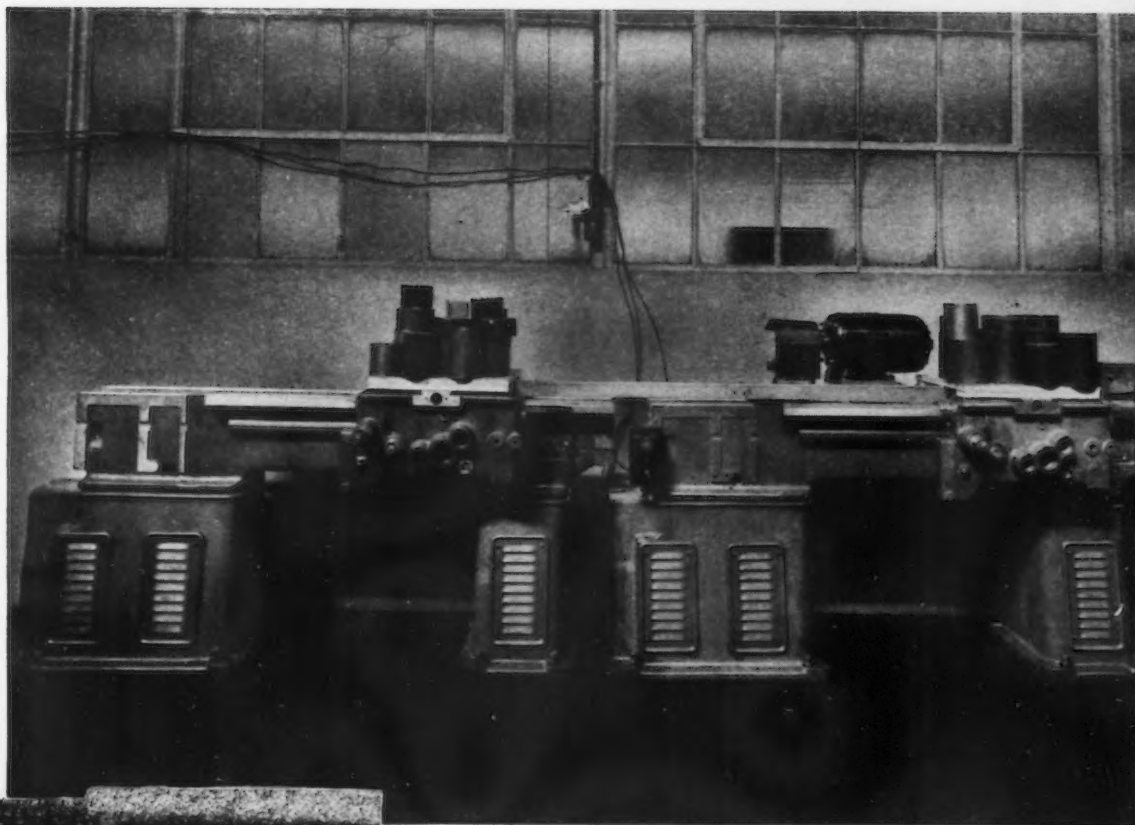
Over and above the \$16,050,000 figure, \$138,000,000 already had been appropriated by Congress for the fiscal year beginning July 1 to start construction of 22 ships, including two battleships. These are in addition to the 72 vessels authorized in the \$1,090,656,000 program. Estimated steel tonnage required for the 22 ships is 38,243 tons, bringing the total plain steel requirements for the complete program, including both the ships already appropriated for and those for which no money has been authorized, to around 153,320 tons. The complete program covers a 10-year period.

Breakdown of estimated plain steel required for the entire program, but excluding the subchasers and torpedo boats classified as "experimental" vessels, is given in an accompanying table.

Of the vessels listed under the heading "Authorized New Program," the deficiency appropriation bill would permit initial construction work on two battleships, two cruisers, one destroyer, one mine layer, two oilers, and

MONARCH *FLAME HARDENING* SOLVES PROBLEM OF BED WEAR!

The picture at the right shows a wear test now going on at Monarch. One of the beds is unhardened, the other *FLAME HARDENED* and ground. Each carriage carries 500 pounds of weight. A crank arrangement, operated by an electric motor, moves each carriage one foot of travel on each lathe bed. As this is written, over 1,250,000 passes have been made with no measurable wear on the *FLAME HARDENED* bed. The unhardened bed is badly scored and has been worn .0008" on the "V" and "Flat Way" sections. This test operates twenty-four hours each day and will be continued indefinitely.



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Sidney, Ohio, U.S.A.

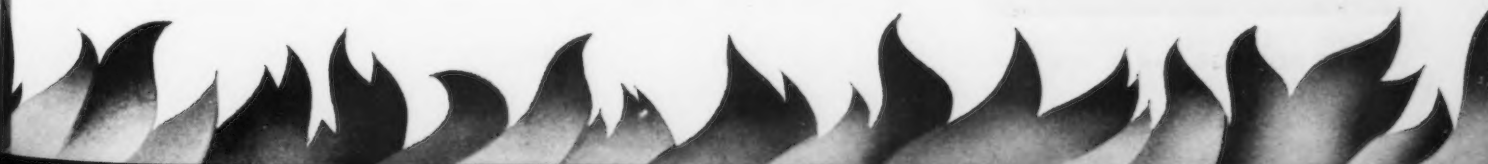
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Agencies in principal industrial centers of this and foreign countries.

THE Monarch announcement of *FLAME HARDENED* lathe beds represents another tradition-shattering milestone in Monarch progress . . . a development that permanently solves the problem of bed wear. Now, the entire "V" and "Flat Way" portions of all Monarch beds may be hardened to a minimum uniform depth of $\frac{1}{8}$ " and can be made $\frac{1}{4}$ " or more. It is interesting to note that since the first announcement of this remarkable achievement, almost all orders received have called for *FLAME HARDENED* lathe beds. After finish planing, the way surfaces are hardened, then ground to a tolerance of .0005" on large precision surface grinders. The hardened and ground way surfaces have the appearance of hardened steel. Grain structure of the entire hardened portion is greatly refined and condensed. Metal directly under the hardened sections is dense and close grained, giving solid rigid support to the hardened sections.

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FINEST *Steel* SEATING EQUIPMENT

**MODERNIZE
HARTERIZE**

ESTIMATED PLAIN STEEL TONNAGE FOR NAVAL PROGRAM

1939 Ap- propria- tions Bill	Authorized New Program		Plates	Shapes	Bars
2	3	Battleships	37,500	12,000	4,750
..	2	Aircraft carriers	6,500	2,000	900
2	9	Cruisers	18,590	6,160	580
8	23	Destroyers	10,050	3,290	290
6	9	Submarines	4,650	1,550	150
1	2	Submarine tenders	5,775	3,410	156
..	3	Destroyer tenders	5,000	1,920	180
..	10	Seaplane tenders	7,000	2,270	180
1	4	Oiler	8,500	2,875	250
1	2	Fleet tug	600	240	30
1	3	Mine sweeper	520	180	20
..	1	Repair ships	2,030	665	63
..	1	Mine layer	1,275	430	37
22	72		108,750	36,990	7,580

two fleet tugs. Total cost of these ships is estimated at \$312,035,500.

Navy's Orders Total \$680,000,000

The number of ships under construction to date as a part of the naval program is estimated at 57 with about half of these being built at private yards. Four 1500-ton destroyers and three 1300-ton submarines have been contracted for but are not yet under construction. The dollar volume of

business placed by the Navy Department thus far under its expanded program has been estimated at \$680,000,000.

Rear Admiral William G. DuBose, chief of the Navy Bureau of Construction and Repair, warned the House Appropriations Committee that the shipbuilding industry is not adequate to supply men for the work in prospect. He testified that further delays are anticipated.

Monopoly Investigation to Get Under Way Along with Elections

WASHINGTON.—Congress has ordered the head hunt. The expedition will be directed by a strongly financed President. It will stalk big business. Beating of the bushes will get under way with the current Congressional campaign. The game will be in the bag on Jan. 5, 1941, two months after the next Presidential election. Lifted eyebrows greet the statement that the fact that the hunt and the political campaigns will parallel each other is merely a coincidence.

Joseph C. O'Mahoney, Democrat of Wyoming, member of the Senate Committee on the Judiciary, leading legislative Nimrod of the hunt, warmly denied what he said was "propaganda" that the purpose of the President and the executive department is to overthrow private enterprise. And to support his position the Senator as a "gesture toward business" had the Department of Commerce, because of its friendliness toward business, included in a resolution setting up a committee to investigate so-called monopolies, control over production and distribution and the effect of price, tax, patent and other Government policies.

The resolution has two joints. One

connects Senate and House members and the other connects executive agencies to form the committee. A joint legislative-executive committee is unusual, though not unprecedented. Its establishment was ordered by a Senate and House resolution. The House Judiciary Committee changed its own resolution to make it identical to the Senate resolution after the latter was passed last Thursday. In his message to Congress, on April 29, the President had asked that the investigation, looking to tightening up of the anti-trust laws, be made by executive agencies only. He specifically named the Federal Trade Commission, the Department of Justice and the Securities and Exchange Commission and suggested "such other agencies of the Government as have special experience in various phases of the inquiry." But even some Administration members of the present Congress cling tenuously to the out-moded idea of its constitutional rights. So Senator O'Mahoney drafted and the Judiciary Committee tentatively voted for a resolution which would have given Congress control of the investigation and the \$500,000 appropriated for the investigation would

be allocated to the President only after approval by the committee.

\$400,000 Voted to President

After the Department of Labor had been added to the resolution as an agency of the investigating committee, the resolution was reported to the Senate. But a pliant Senate turned thumbs down on its own Judiciary Committee by voting *carte blanche* \$400,000 to the President. Since the power of the purse, which Congress under the Constitution was supposed to hold onto, was given to the Chief Executive it is clear that he and not Congress will have direction of the investigation and of the committee. The Senate was bold enough to keep \$100,000 for the committee. Senator Norris, Progressive Republican of Nebraska, perennial anti-trust crusader, rallying to the defense of the White House, struck at the proposal of the Judiciary Committee for legislative control of the \$500,000, declaring that "it was a slap in the face of the President." The "slap" was warded off by a vote of 40 to 28 due to the quaint Norris plea plus the valiant efforts of Senate leaders. The House resolution quickly was modified to accord with the Senate resolution.

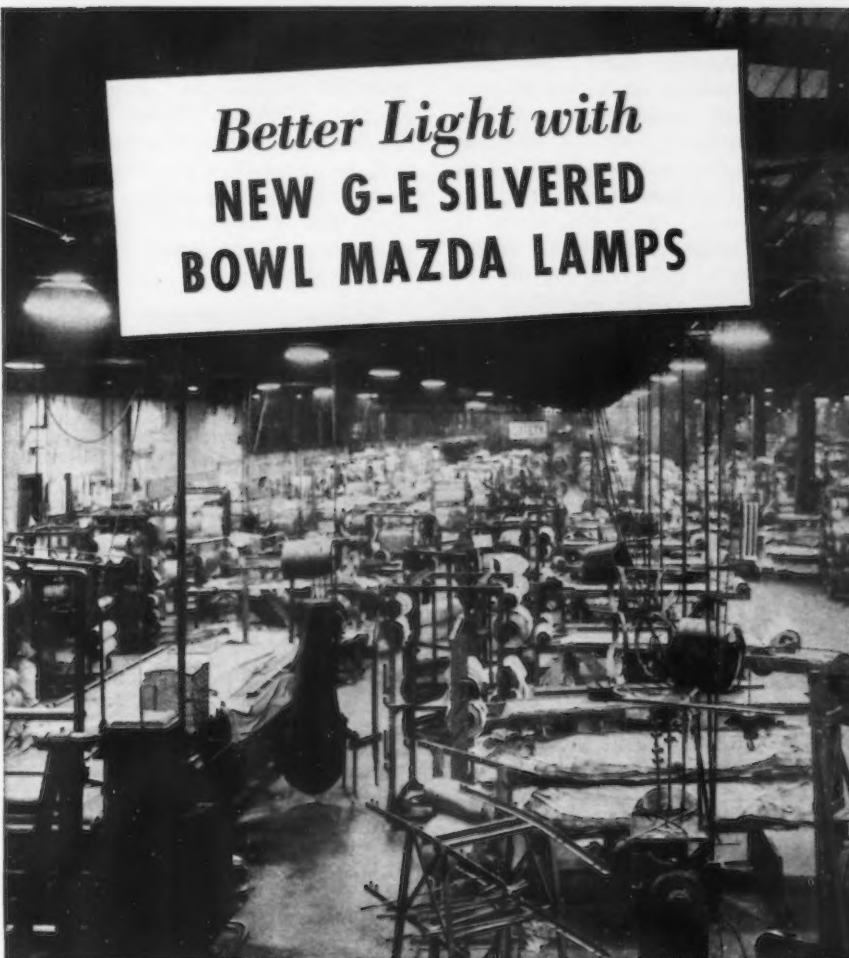
The resolution sets up a committee of 12, equally divided between the legislative and executive branches. The resolution provides for three Senators, and three Representatives and one person each representing the Departments of Justice, Treasury, Commerce and Labor, the Federal Trade Commission and the Securities and Exchange Commission.

Members of the committee are expected to be named soon, after which the investigation, one of the broadest ever undertaken, will begin.

Steel to Be Under Fire

As is well known such industries as steel, cement, lumber, and rubber will come under fire. Preliminary studies, particularly as they relate to so-called rigid prices and the basing point system already have been made by the Federal Trade Commission and are being studied by the Department of Justice, and undoubtedly will be made a part of the inquiry. It is expected that there will be a long parade of industrial and financial executives brought before the committee. It will sit through the 76th Congress or until Jan. 5, 1941. Under the resolution the committee is authorized "to utilize the services, information facilities and personnel of the departments and agencies of the Government." Actually this power, as well as the power of subpoena of witnesses, will be directly in the hands of the President, rather

Better Light with NEW G-E SILVERED BOWL MAZDA LAMPS



The tire building department in Dunlop's Buffalo plant showing the main lighting installation with 500-watt G-E Silvered Bowl MAZDA lamps.

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Important to the success of any relighting program is the use of good lamp bulbs . . . such as G-E MAZDA lamps, the kind that *Stay Brighter Longer* and give full lighting value for your money. Next time you buy lamp bulbs, follow the example of thousands of purchasing agents . . . the men who buy bulbs for the outstanding industrial and commercial concerns, great railroad systems, and public utilities . . . and specify G-E MAZDA lamps. General Electric Company, Dept. 166, Nela Park, Cleveland, O.



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GENERAL ELECTRIC
MAZDA LAMPS



LAMPS WITH THIS MARK
STAY BRIGHTER LONGER

G-E Silvered Bowl MAZDA lamps are regular MAZDA lamps with a coating of "mirror" silver on the bowl.

than the committee itself. The committee will make a study "of the concentration of economic power in American industry and the effect of that concentration upon decline of competition," to quote from the President's message. The committee is directed to make its first report to the next session of Congress, the first of the 76th, with recommendations for revision of the anti-trust laws.

While the Senate was acting on the so-called anti-monopoly resolution, the

steel industry was the subject of a long political tirade by Representative Henry G. Teigan, Farmer-Laborite of Minnesota. Mr. Teigan spoke on his bill to nationalize the iron and steel industry. Waxing warm, Mr. Teigan said that "The steel monopoly is America's greatest conspiracy in restraint of trade."

Advocates Government Control of Steel Industry

Under the Teigan bill the Government would take over the iron and

steel industry in its entirety—just like that. If owners did not want to sell, then the Government would condemn the properties and assume ownership under the right of eminent domain. The property would be paid for through the issuance of United States bonds drawing an interest rate of 3 per cent. The industry would be run by a board of nine members, four to be chosen by the workers and five named directly by the President with the consent of the Senate. It is foolish to talk of any other solution of this problem, harangued Mr. Teigan.

"Let us by all means have Government ownership and operation of the iron and steel industry of the United States," he urged in closing his opus.



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Treaties Check Turkish Machinery Orders in U. S.

WASHINGTON. — Sales of American machinery to the Turkish government and semi-governmental banks and agencies are being hampered by Turkey's policy of purchasing requirements, except war material, from countries with which it has clearing agreements, according to the Machinery Division, Department of Commerce. More liberal credits than extended by American exporters and lower prices are also diverting Turkish trade.

Turkey's first five-year plan of industrialization is near completion and a second five-year plan has been announced. Principal supplier of machinery and machine tools to Turkey is Germany, purchases being made chiefly through clearing agreements. Higher quality has sold some American equipment such as excavators, tractors, compressors, drills, and machine tools in Turkey.

On machinery for railroad repair shops and railroad rolling stock Germany gets most of the business. Recently Krupp was awarded a large railroad rolling stock order with delivery over three years and payment over six years. Other European countries competed for the order.

England gets some equipment business from Turkey because of liberal English credits. Turkey may spend \$60,000 for American equipment for harbor and mining enterprises should dollar exchange be available.

The report says that Turkish dealers complain that the prices of American small machine tools are higher than those for similar German tools although American equipment is admittedly better.

PWA Likely to Buy \$90,800,000 of Steel

WASHINGTON.—Iron and steel orders estimated at \$90,800,000 will be placed under the new \$600,000,000 PWA program, according to Bureau of Labor Statistics estimates made public by PWA in connection with an announcement that President Roosevelt had directed that agency to prepare for allotments immediately upon passage and signature of the PWA Act.

The total cost of all materials is placed at upwards of \$322,000,000, steel being the largest single item. Next come estimated expenditures of \$27,500,000 for foundry and machine shop products, followed by \$23,000,000 for electrical machinery, apparatus and supplies. Several months will elapse before actual orders for heavier products such as iron and steel are booked. PWA expenditures for steel during the period of July 1, 1933-June 15, 1937, aggregated \$457,000,000 yet represented only about 6.5 per cent of the total invoiced sales during the four-year period.

Taking PWA estimates and revising those published in THE IRON AGE of April 28, page 56, to adjust them to a \$600,000,000 rather than a \$1,000,000,000 program, outlays for iron and steel and equipment lines are broken down as follows:

Structural and reinforcing steel..	\$36,600,000
Other rolling mill products, n.e.c.	21,000,000
Heating and ventilating equipment	2,400,000
Cast iron pipe and fittings	10,380,000
Miscellaneous remanufactured iron and steel products	32,480,000
Foundry and machine products...	27,500,000
Electrical machinery and appliances	23,000,000
Engines, turbines, tractors, etc...	6,000,000
Pumps and pumping equipment...	4,680,000

The AFL estimates that 700,000 tons of steel will be required for the expanded slum clearance program. The work relief bill provides an additional \$300,000,000 for loans to be made by the United States Housing Authority and is intended to provide housing for 200,000 families.

Machine Tool Order Index Drops to 66.7

THE index of machine tool orders for May was 66.7, with 47 per cent of the orders for foreign shipment, compared with an index of 90.3 in April (1926-100) and 208.5 in May of 1937, according to the National Machine Tool Builders' Association. Not since 1934, reports the association, has manufacturing production been at so low a level, causing a corresponding decline in domestic orders for machine tools.

NLRB Dismisses Complaint Against A. S. & R. Co.

WASHINGTON.—The National Labor Relations Board has dismissed a complaint against the American Smelting & Refining Co., New York, that the company had dominated an inside union and had interfered with the self-organization of its employees at its Baltimore, Md., plant. Charges against the company were filed by the Copper Workers Indus-

trial Local Union No. 398, International Union of Mine, Mill and Smelter Workers of America, affiliated with the CIO.

Allegheny Steel Co. and Ludlum Steel Co. announce that effective immediately the Pacific Coast business of both companies will be consolidated under the supervision of James H. Spade, 1417 Santa Fe Avenue, Los Angeles, Cal. Complete warehouse stocks of the products of both companies will be established.

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- 6, 10, 16, 20 ton capacities

OILGEAR SURFACE BROACHING MACHINES

. . . THE NEWS IN BRIEF . . .

... *Automobile production will not stop during summer; actually only three weeks' shutdown is anticipated . . . Sales and assemblies show gains, but steel outlook is not improved.*—Page 50.

... *Maritime Commission to contract for 21 ships in addition to 16 cargo boats, 12 tankers and one liner already awarded . . . Monopoly investigation, authorized by Congress, to get under way along with Congressional elections . . . Steel industry to be under fire.*—Page 54.

... *Industrial buying of machine tools at a low level, but some business has come from vocational schools in Cleveland and Brooklyn.*—Page 93.

While hopeful of higher production in the fall and spring, 1939 pressed steel frame requirements will be started slowly.—Page 49.

According to official announcement, W. F. Detwiler, president of Allegheny Steel Co., will be chairman of the board of the Allegheny Ludlum Steel Corp., and Hiland G. Batcheller, president of Ludlum Steel Co., will be president of the new company.—Page 49.

Sale of American machinery to Turkish government checked by treaties.—Page 58.

Iron and steel orders estimated at \$90,800,000 will be placed under the new \$600,000,000 PWA program; total cost of all materials placed at \$322,000,000.—Page 59.

Flexrock Co., Philadelphia, announces a general pay increase as sales rise to an all-time high.—Page 62.

The Malleable Founders' Society to meet in annual convention at White Sulphur Springs, June 16 and 17.—Page 62.

NLRB orders non-CIO labor union disestablished.—Page 62.

War Department seeks to develop an army on wheels; more automotive standardization

need of Army, officials tell S.A.E.—Page 62.

A.S.M.E. to meet at Statler Hotel, St. Louis, June 20. Major James H. Doolittle to receive

the Spirit of St. Louis Medal. Many technical sessions scheduled.—Page 63.

Symposium on welding held by the Engineering Society of Milwaukee.—Page 63.

Ohio stood first among the principal industrial States in total number of man-days idle during 1937.—Page 65.

Commissioner of Internal Revenue Guy T. Helvering calls attention to ruling on contributions to State unemployment funds.—Page 65.

AFL demands closed shop in New York scrap yards; special meeting called by the New York chapter of the Iron and Steel Institute.—Page 66.

New type of all-welded building nears completion at Chicago Heights, Ill.—Page 66.

Welder Manufacturers Association meet to develop transformer specification standardization.—Page 66.

Navy Department accept bids totaling \$5,463,801 for propelling machinery for six new submarines.—Page 66.

"Effects of Alloying Elements and the Physical Properties of Steel in Forged Sections" is new book published by Hepenstall Co.—Page 67.

United States Steel has 506 new stockholders.—Page 67.

Alfred P. Sloan, Jr., not optimistic for motor industry's immediate future.—Page 80.

E. T. Weir says steel prices are not too high.—Page 80.

Fight threatens to disrupt the UAW.—Page 82.

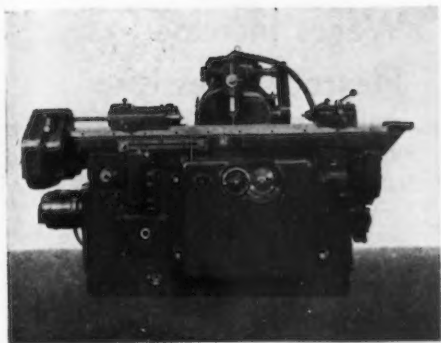
\$2,000,000 a year authorized for educational war orders.—Page 82.

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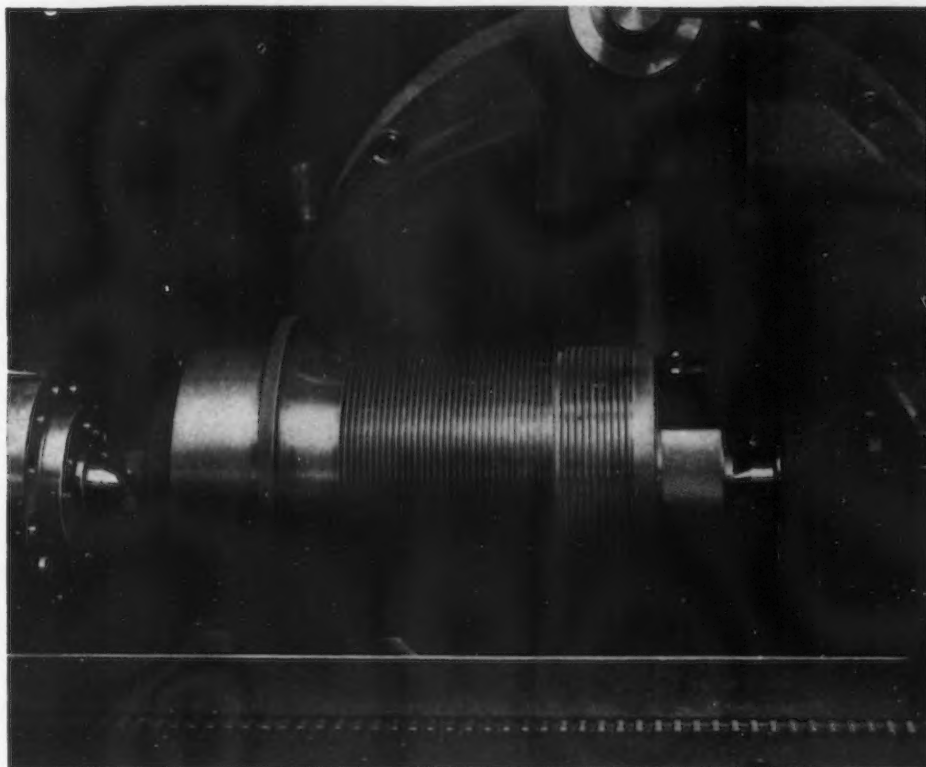
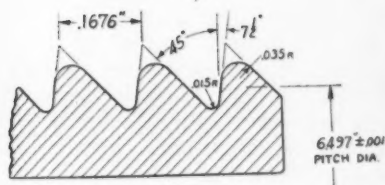
CONVENTIONS

June 20 to 24—American Society Mechanical Engineers, St. Louis.
June 27 to July 1—American Society for Testing Materials, Atlantic City, N. J.
Sept. 26 to 30—Association of Iron and Steel Engineers, Cleveland.
Oct. 10 to 14—American Institute of Steel Construction, French Lick Springs, Ind.
Oct. 12 to 15—The Electrochemical Society, Rochester, N. Y.



the Answer

TO A DIFFICULT THREADING PROBLEM



The buttress thread on airplane cylinder barrels is of vital importance. Human lives depend on its holding ability, because the cylinder head, with valve seats and ignition plugs, is secured to the cylinder by this thread. The threads must be smooth, true to form and with accurate lead. A gas tight joint is required.

The J & L Automatic Thread Grinder, chosen by a large manufacturer of airplane engines, produces the smooth finish desired, with correct lead, shape, and pitch diameter. Note the rounded tops and bottoms on the thread. These are obtained automatically by the use of the J & L Pantograph Wheel Truing device.

The barrels are held on an arbor which is mounted on centers in the machine. The threads have been roughed previous to the grinding operation. The thread-matching device, a built-in feature of the machine, takes care of matching the rough threads.

For continuous production, a bench fixture is supplied, which allows the operator to match the thread and adjust the dog on the second piece of work, while the first is being ground.

Automatic wheel truing keeps the wheel dressed to the correct shape and automatic sizing feeds the wheel in a predetermined amount at each pass. The machine stops when size is reached. Four barrels per hour are ground, this rate including loading time and an allowance for extras. One operator can easily take care of two machines, producing eight finish threaded barrels each hour.

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Hannifin air control valves have no packing and no leakage or packing maintenance troubles. Made in 3-way and 4-way types, hand and foot operated, manifold, spring return, electric and special models. Write for Valve Bulletin 34-A.

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HANNIFIN *"Packless"* VALVES

AIR CONTROL

Wages Increased as Flexrock Sales Rise

FLEXROCK CO., Philadelphia, has announced a general pay increase for all employees, following an advance in sales to an all-time high, according to C. G. Milner, the company's general manager. Sales for May were 64 per cent above the corresponding month of 1937.

The Flexrock company's business upswing is attributed by Mr. Milner to (a) an improved cellulose process in manufacture of its major product, Ruggedwear Resurfacer, for repairing concrete floors and (b) the helpful influence of intensive trade journal advertising, direct mail promotion and a stepped up sales force.

That many plants are now preparing their floors for heavier production in the late summer and fall indicates that a business rise will develop in the months just ahead, Mr. Milner said.

Malleable Founders Meeting on June 16-17

THE Malleable Founders' Society will meet in annual convention at White Sulphur Springs, W. Va., June 16 and 17. Included in the first day's sessions will be lectures on "Gating and Feeding" by Enrique Touceda, "Reducing Costs" by John A. Wagner, and "Public Relations" by E. E. Griest. The second day will feature a technical exposition of malleable iron as an engineering material by Enrique Touceda and James H. Lansing, a lecture on "Wage Differentials and Job Evaluation" by Anthony Haswell, the results of a committee study of pearlitic malleable presented by Homer M. Wright, and the results of a study of annealing methods and equipment by James H. Lansing.

NLRB Orders Non-CIO Labor Union Disestablished

WASHINGTON.—The NLRB has ordered the Burnside Steel Foundry Co., Chicago, to disestablish the Union of Foundry Workers, ignore its contract with that organization, and bargain collectively under a written contract with the CIO's Amalgamated Association of Iron, Steel and Tin Workers. The Board dismissed discrimination charges involving lay-off or discharge of five employees during September and October, 1937.

A. S. M. E. Will Meet In St. Louis June 20

A TIME study session on Monday evening, June 20, will open the American Society of Mechanical Engineers' semi-annual meeting at the Statler Hotel, St. Louis. The 15 sessions will extend through Thursday morning. Major John K. Christmas, of Washington, will deliver a lecture on high-speed tanks Tuesday evening, and at the banquet on Wednesday, Major James H. Doolittle, director of aviation, Shell Petroleum Corp., will receive the Spirit of St. Louis medal. Dr. Harvey N. Davis, president of the A.S.M.E. and of Stevens Institute of Technology, will speak on engineering and health.

Technical sessions will be devoted to fuels, boiler feedwater, railroad, process industries, power, hydraulics, apprenticeship training, welding and flame cutting, surface finishing, flanges, and iron and steel. William Carter Bliss is to talk on foundry maintenance, and C. C. Morgan will present a paper on the use of plastic bronze for bearings. James R. Weaver is to report on the standardization of roughness measurements, followed by E. J. Abbott, inventor of the Profilometer, and Henry F. Kurtz, who will talk on the scope and limitation of the projection method for shop measurement.

"Oxy-acetylene Surface Hardening" is the title of a paper to be given by A. K. Seemann. H. R. Wass will discuss welding as applied to plant maintenance, while E. W. P. Smith will analyze arc-welding costs.

The Calvin Rice Lecture is to be delivered Tuesday afternoon by William Robb Barclay of the Mond Nickel Co., Ltd., London. His subject is "Some Metallurgical Contributions to Engineering Progress."

Milwaukee Engineers Hold Symposium on Welding

MILWAUKEE.—The Engineers' Society of Milwaukee, at its monthly meeting on June 15, at the Wisconsin Club, held a symposium on welding metals, with half-hour talks by the following speakers: K. L. Hansen, Harnischfeger Corp., "Classification of, and Equipment for Welding"; L. J. Larsen, A. O. Smith Corp., "Some Metallurgical Aspects of Welding"; W. R. Kepler, A. O. Smith Corp., "Designs for, and Examples of Welding."

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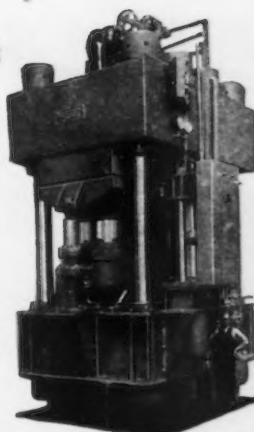
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More Automotive Standardization Need of Army, Official Tells SAE

THE War Department seeks to develop an army on wheels using a maximum of fighting machinery to reduce loss of life among soldiers, Louis Johnson, Assistant Secretary of War, said this week in an address prepared for the Society

of Automotive Engineers' semi-annual meeting at White Sulphur Springs, W. Va.

Tracing post-war development of automotive equipment, Mr. Johnson revealed that by 1933 the surplus war equipment had been reduced to the

point where there was only one truck, one motorcycle and one passenger car for each regiment. Appropriations for automotive equipment, withheld prior to that time, have been liberally provided since then, however, and today the Army has 13,000 motor vehicles and the National Guard 8000. The infantry has been re-equipped with new tanks and the mechanized cavalry brigade has been furnished with practically all of its combat vehicles.

Too Many Types

The principal obstacle in putting the Army on wheels, Mr. Johnson continued, pertains to standardization of equipment. Because of the restriction of small lot buying and competitive bidding, the Army now has 28 different makes and models of passenger cars and 143 makes and models of trucks. In a major emergency, the maintenance of this number of different vehicles at the front obviously would be an impossible task. "We must reduce the number of necessary types to a minimum," said the speaker. . . . In time of war we must take the best of our types available and immediately go into mass production."

Tanks and combat cars present another problem. And there are now available a limited number of firms capable of producing successfully our special needs in tanks components, Mr. Johnson indicated. So long as we are able to continue the manufacture of a limited number of tanks annually, we may expect a few such firms to remain in business as a nucleus for war expansion. The problem of the light tank, however, is the number of parts—about 22,000, covered by approximately 3300 drawings, or too many to make tanks adaptable for mass production, he said.

Depends On Civilian Industry

The Army's arsenals are really only experimental laboratories and if all six of them were worked to full capacity with the most modern equipment, they could turn out less than 10 per cent of our total needs in time of war. The time necessary for civilian industry to get into production is estimated from five months to a year, depending upon the immediate conditions. Mr. Johnson deems it essential, therefore, that we have on hand all the tanks and combat cars which our Regular Army and National Guard will require immediately for protection of our country.

A tank in essence is a land battleship and must depend not only upon its mobility but on its shock and sur-



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prise tactics, on its ability to deliver a tremendous fire power and on the protection it affords its crew. As presently designed, however, their noise and dust on the road tend to destroy the element of surprise, and the vulnerability of their armor against anti-tank guns tends to reduce ability to protect crews. Difficulties of communication tend to destroy coordinated fire power and shock tactics. Mr. Johnson placed before automotive engineers the challenge of sound improvement of mechanized automotive units and their standardization for mass production.

Ohio First in Strike Idleness in 1937

CHICAGO.—Ohio stood first among the principal industrial states in the total number of man-days idle during 1937, according to a report just issued by the Illinois Manufacturers' Association and based on data received from the United States Department of Labor.

Michigan was second, Pennsylvania third, New York fourth, California fifth and Illinois sixth.

The record follows:

State	No. of Strikes	Workers Involved	Man-days Idle
Ohio	298	207,428	3,938,424
Michigan . . .	306	354,499	3,924,752
Pennsylvania .	641	323,432	3,695,671
New York . . .	897	221,391	3,180,741
California . .	259	79,314	1,940,979
Illinois	272	99,355	1,434,863

For the first time in the years for which comparable figures are available, Michigan had more workers involved in strikes during 1937 than any state.

Chicago had 110 strikes with 31,749 workers involved and 452,803 man-days idle during 1937. This was a larger number than any other year in Chicago for which information is available.

New York, however, with 614, had more strikes during the year than any other four cities. Philadelphia had 192; Detroit had 178; and Pittsburgh had 99.

Although New York had many more strikes than any other city, the number of workers involved in the Detroit strikes was greater. Detroit had over 195,000 workers involved in strikes compared with New York's 136,000.

Ruling on Contributions to State Unemployment Funds

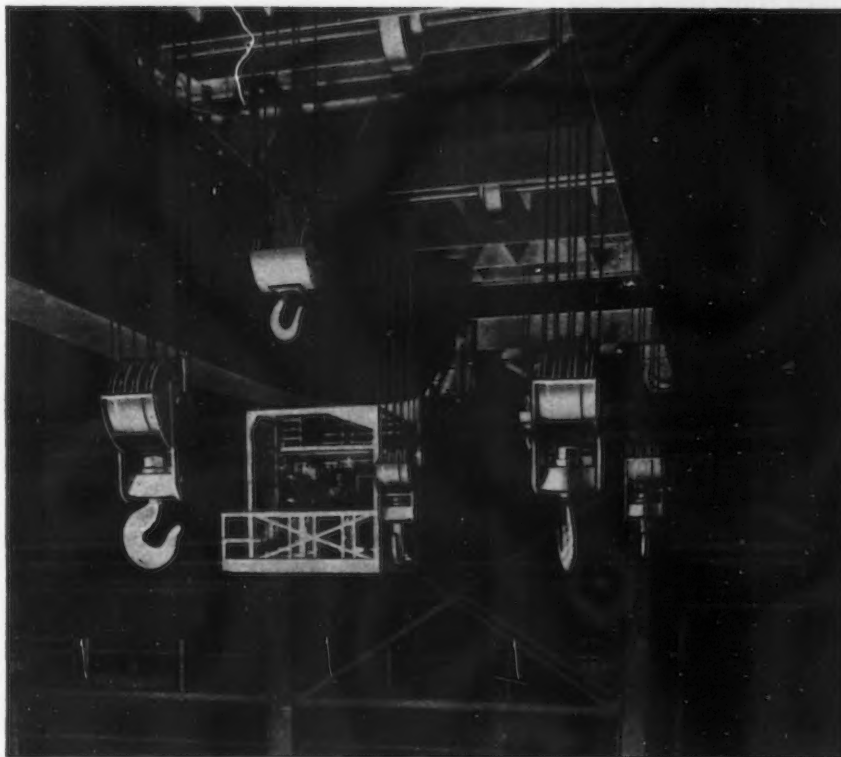
WASHINGTON.—Commissioner of Internal Revenue Guy T. Helvering in a statement has called attention to Section 810 of the recently enacted Revenue Act of 1938, which is of particular interest to employers of eight or more employees who failed to make their contributions to the state unemployment compensation funds which come under this act with

respect to the calendar year 1936 prior to April 1, 1937.

Commissioner Helvering explained that the relief provisions contained in Section 810 of the Revenue Act of 1938 are applicable only to the calendar year 1936. In a great many instances employers of eight or more who were denied 90 per cent credit on the Federal tax have filed claims for abatement or refund to which they are now entitled when they have made contributions after April 1, 1937, to

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state unemployment compensation funds. In other instances the Bureau of Internal Revenue has information which will permit the prompt adjustment of the returns. The commissioner pointed out, however, that the bureau probably does not have a record of some employers who paid the full amount of the Federal tax and also made full contributions to the state unemployment compensation funds. In such cases the commissioner emphasized that the taxpayers affected have the privilege of filing claims for refund. Such claims may be filed within four years from the date the Federal tax was paid to the Collector of Internal Revenue, and will be considered for allowance, provided the contributions to the state unemployment compensation funds have been made on or before July 26, 1938.

AFL Demands Closed Shop In New York Scrap Yards

A DEMAND for a closed shop in the New York scrap yards, presented by the AFL, will be considered at a special meeting of the New York chapter of the Institute of Scrap Iron and Steel this week. The present labor agreement governing the New York trade provides for an open shop, a minimum wage of 45c. per hr. and a 45-hr. week of nine hours per day.

The union has presented demands for revision of the contract, beginning with June 21, including the closed shop, an 8-hr. day, a 40-hr. week, an increase in the minimum wage to 65c. per hr. and various other conditions of employment.

New Type of All Welded Building Nears Completion

A NEW fertilizer plant for International Agricultural Corp., first industrial structure utilizing the new welded portal truss designed by engineers of the Austin Co., Cleveland, to accommodate conveyors on rails passing through the roof members, is nearing completion at Chicago Heights, Ill.

The trusses, which are a functional part of this all-welded rigid-frame structure, were completely prefabricated in the Austin shops. They provide 12 7-ft. passageways just below the building's roof and rails extending between the trusses will carry industrial cars, which in turn will be loaded from elevator towers overhead.

Special rail supports, as well as all the other structural members, were welded in the Cleveland fabricating shop. A total of 250 tons of structural steel was used on the job, which required 13,000 lin. ft. of welding, only 1100 ft. of which were welded in the field.

Transformer Specifications To Be Standardized

PLANS for developing standard transformer specifications were approved by members of the Resistance Welder Manufacturers Association at a meeting in Detroit on June 9.

Walter Anderson, president of the association, requested A. D. Jardine of the Welding Machines Mfg. Co. to take charge of this work and present recommendations at the next meeting of the association to be held in Detroit on July 13.

In view of the fact that manufacturers of various types of controls will be interested in this and other types of work contemplated by the association, it was decided to permit them to enroll as associate members so that they may actively participate in the consideration of questions of mutual interest.

Submarine Machinery to Cost \$5,463,801 Awarded

WASHINGTON.—The Navy Department last week accepted bids totaling \$5,463,801 for propelling machinery for six new submarines. The Cleveland Diesel Engine division of General Motors Corp. will build engines costing \$2,583,000 for three of the vessels. Fairbanks, Morse & Co., Chicago, will construct the machinery for the other three undersea craft.

Lathe Manual Revised

A NEW edition, the 34th, of its machinist's manual on "How to Run a Lathe" has been announced by the South Bend Lathe Works, South Bend, Ind. The new book, which has been completely revised, has 128 pages and contains more than 350 illustrations, showing practically every type of lathe set-up, and methods of handling important operations. It is being printed in French, Spanish, Portuguese, Swedish and Dutch, as well as in English. Copies are 25c each, postpaid.

..TRADE NOTES..

Harrison & Co., Haverhill, Mass., makers of cutting down, polishing and mirror finishing compounds, has placed on the market new compounds for buffing, polishing and mirror finishing stainless and high carbon steel, also a new 4A cement which is a substitute for glue used on belts, rolls, buffs, etc.

American Dirigold Corp., Kokomo, Ind., has changed its corporate name to American Art Alloys, Inc.

Loftus Engineering Corp., 509 Oliver Building, Pittsburgh, has been formed to handle engineering problems relating to the design of regenerative furnaces, and, in particular, the design, construction and operation of regenerative furnaces. F. H. Loftus will head the organization and R. G. Loftus will be in charge of sales.

Dietzel Lead Burning Co., Pittsburgh, recently purchased a shop building at Coraopolis, Pa., for business expansion. The main office is located in the Keystone Building, Pittsburgh.

Key Co., East St. Louis, Ill., which has recently completed a new foundry building, has installed a 3-ton "Lectromelt" furnace for the manufacture of high-pressure and alloy-steel fittings.

Heine Boiler Division of Combustion Engineering Co., Inc., recently manufactured in its plant at St. Louis, a steel tower 92 ft. high and weighing 245 tons, which was shipped on two special cars to an oil refinery at Smith's Bluff, Tex. The tower has a diameter of 13 ft., 2 in., and is made of steel plate 2½ in. thick.

Booklet on Effects of Alloys in Forged Steel Published

A BOOKLET on "Effects of Alloying Elements and the Physical Properties of Steel in Forged Sections," has been published by the Heppenstall Co. and is available to engineers, designers, purchasing agents and others who may be interested. Contents include definitions of heat treating terms; specific effects of a number of alloying elements; grain size classification charts; hardness conversion tables; and tables of physical and chemical properties of 26 types of acid open-hearth steel in forged sizes up to 34 in. in diameter.

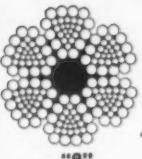
Information contained in the booklet includes the results of years of study by Heppenstall metallurgists and engineers. Copies may be obtained from the company's Pittsburgh, Bridgeport, Conn., or Detroit plants.

United States Steel Has 5506 New Stockholders

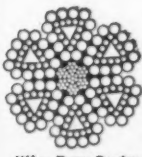
UNITED STATES STEEL CORP. common stockholders on May 31, numbered 171,456, an increase of 4184 since March 5. Preferred stockholders on April 28 totaled 65,188, an increase of 1322 since Jan. 28.



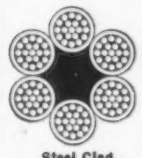
Style B Flattened Strand



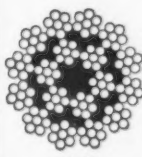
"G" Flattened Strand



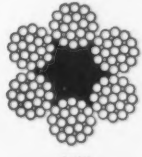
Wire Rope Center



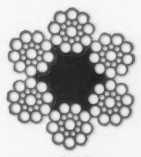
Steel Clad



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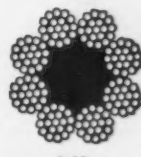
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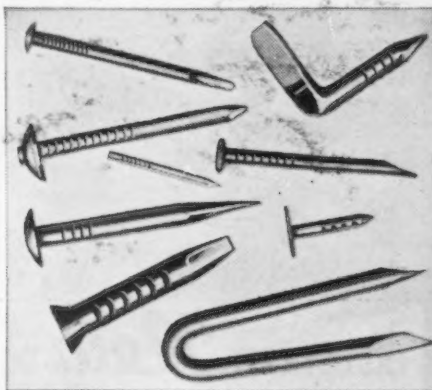
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Sheets: Black, Galvanized, Special Coated, Roofing and Siding—14 Styles

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.. PERSONALS ..

RAYMOND M. DENNIS, who has been superintendent of flanging at the Lukens Steel Co., Coatesville, Pa., has been appointed general manager of the flanging department in charge of estimating, sales and production on flanging work. He was graduated from the University of Pennsylvania in 1910 and after miscellaneous engi-

neering experience, joined the Bethlehem Steel Co., Coatesville, Pa., in the engineering department in 1913. He left the company five years later to join E. I. du Pont de Nemours & Co. Later he was general superintendent of the W. H. Wilkie Co., and of the W. I. Pollock Co., general contractors. He joined the Lukens organization in

1925 as press foreman of the flanging department.

♦ ♦ ♦

GEORGE D. HARTLEY, who with the late Frank H. Sleeper organized the firm of Sleeper & Hartley, Worcester, Mass., and was for many years treasurer, general manager and sales man-



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DOORS



R. M. DENNIS

ager, has opened an office for general consultation purposes at 311 Main Street, Worcester. He is prepared to handle problems relating to inventions and patents and their marketing, experimental and development work, plant surveys, designing and building equipment and machines, management and personnel, and sales problems. Since his retirement from Sleeper & Hartley in 1936, he has done a good deal of European travel, visiting many plants and investigating industrial conditions in the leading countries.

♦ ♦ ♦

W. T. SCHAUP, who has been identified with the steel industry since 1891, has been appointed service engineer with offices at 1714 Keystone Hotel Building, Pittsburgh, by Basic Dolomite, Inc., Cleveland. He joined the Carnegie Steel Co. as a messenger boy. He later was made senior melter foreman, then assistant open hearth superintendent. He left to become identified with the old Midvale Steel & Ordnance Co., serving as open-hearth superintendent at the Franklin works for a number of years. He subsequently became associated with the Wheeling Steel Corp., and Inland

Steel Co., and Pittsburgh Crucible Steel Co., where he remained until 1927. In that year he went with the Canadian Refractories Co., Montreal.

♦ ♦ ♦

DAVID T. MARVEL has been appointed manager of tube sales for the Timken Roller Bearing Co., Canton,



W. T. SCHAUP

Ohio, and will have full charge of the sale of all forms of Timken seamless steel tubing.

♦ ♦ ♦

J. PIERRE VOGEL has been added to the engineering sales organization of the Link-Belt Co., Chicago, and will make his headquarters in Pittsburgh, from which point he will specialize on the application of bituminous coal preparation plant equipment, including coal tipples, washeries, and other materials handling problems. Mr. Vogel has spent 25 years in this field, 18 as contracting engineer and seven as vice-president and general manager.

♦ ♦ ♦

WESLEY P. SYKES, metallurgical engineer at the Cleveland wire works of the General Electric Co., was recently awarded the honorary degree of Doctor of Engineering at the commencement exercises of Case School of Applied Science, Cleveland. After the War Dr. Sykes entered the General Electric Co., where he became interested in the study of the operations and production of pure tungsten and molybdenum metals in wire form. The development of new alloys con-

taining these two metals has comprised the major part of his work.

♦ ♦ ♦

A. C. HOWARD, for the past six years assistant general manager of the Beloit, Wis., plant of Fairbanks, Morse & Co., Chicago, has been appointed general manager of that plant. This position formerly was held by A. E. ASHCRAFT, vice-president in charge of manufacturing, in addition to his executive control of all Fairbanks, Morse factories in the United States and

Canada. Mr. Howard has been identified with the company for 22 years and has served as general manager of other factories of the company both in this country and Canada.

♦ ♦ ♦

R. B. SCHENCK, chief metallurgist for the Buick Motor Car Co., has been elected chairman of the Saginaw Valley chapter, American Society for Metals. Other officers named include CARL F. JOSEPH, chief metallurgist of the Saginaw Malleable Iron division,

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7 1/2" COLUMN
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Cincinnati Bickford quality construction throughout—with automatic oiling, anti-friction bearings, multiple-splined integral key shafts, head mounted on ball bearing rollers

and hardened steel armway, insures long life and fast operation.

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vice-chairman, and C. M. CAMPBELL, division metallurgist, Chevrolet transmission division, secretary and treasurer.

♦ ♦ ♦

H. C. CROSS, purchasing agent of the Sloss-Sheffield Steel & Iron Co., has taken office as president of the Birmingham Purchasing Agents Association.

♦ ♦ ♦

HARMON V. D'AGOSTINO has been appointed Eastern manager for De-

signers for Industry, Inc., product designer, Cleveland. His headquarters will be in the company's New York office.

♦ ♦ ♦

W. E. CRAWFORD, of the A. O. Smith Corp., has been elected chairman of the Milwaukee section, American Institute of Electric Engineers. FRED W. BUSH, Allis-Chalmers Mfg. Co., was elected secretary. P. B. HARWOOD, Cutler-Hammer, Inc., and W. J. OESTERLEIN, Harnischfeger Corp.,

were elected directors for three year terms, and M. X. MOSER, Wisconsin Telephone Co., for two year term.

♦ ♦ ♦

WALTER E. SCHULTZ, Perfex Corp., Milwaukee, has been elected president of the Milwaukee Association of Industrial Advertisers. Other newly elected officers are: vice-president, PRESCOTT C. RITCHIE, Waukesha Motor Co., Waukesha, Wis.; secretary-treasurer, JAMES TATE, Delta Mfg. Co., Milwaukee; director for three years, ARNOLD ANDREWS, Bucyrus-Erie Co., South Milwaukee.

♦ ♦ ♦

CURTIS M. YOHE, vice-president of the Pittsburgh & Lake Erie Railroad, has been elected a director of the Mellon National Bank, Pittsburgh, succeeding the late J. H. Lockhart.

♦ ♦ ♦

J. F. DUFFY has been made manager of the Cleveland branch of the Crane Co., succeeding the late W. K. Glen. Mr. Duffy for 10 years has been assistant manager of the branch.

♦ ♦ ♦

DE NYSE W. ATWATER, manager of commercial engineering of the lamp division of Westinghouse Electric & Mfg. Co., East Pittsburgh, has been elected president of the Illuminating Engineering Society.

♦ ♦ ♦

H. B. RICE, formerly vice-president of the Metalspray Co., Inc., Los Angeles, has joined the engineering department of the Metallizing Co. of America, Inc., Los Angeles, and will continue his work in process development fields.

♦ ♦ ♦

GEORGE G. PRAGST has been appointed exclusive representative in New England by R and L Tools, Philadelphia. He will make his headquarters at 260 Esten Avenue, Pawtucket, R. I.

♦ ♦ ♦

FRED D. BAKER, of Lakewood, Ohio, has been made factory representative in northern and central Ohio for the Westcott Chuck Co., Oneida, N. Y.

♦ ♦ ♦

H. A. RICHMOND, for 21 years general manager and treasurer of the General Abrasive Co., Niagara Falls, N. Y., has resigned as general manager to become chairman of the board.

♦ ♦ ♦

LOUIS POOCK, vice-president and general manager of the Sheffield Gage

PERKINS MAN COOLER



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**PERKINSMAN
COOLERS**, recognized as the most efficient appliance for bringing comfort to workers in hot places, are proving a vital factor in production. They are keeping men comfortably at work in the hottest places, reducing labor turnover, speeding production.

Made in **OSCILLATING** and **STATIONARY** types (both portable).

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Corp., and the Cimatoool Co., Dayton, has been elected chairman of the Dayton-Cincinnati-Columbus section of the Society of Automotive Engineers. Other officers elected include: CHARLES E. DICKERSON, president, Miami-Dickerson Steel Co., vice-chairman of the Dayton division; K. W. STINSON, professor of automotive engineering, Ohio State University, vice-chairman, Columbus division; W. W. TANGEMAN, vice-president, Cincinnati Milling Machine & Cincinnati Grinders, Inc., vice-chairman, Cincinnati division; E. S. PATCH, engineering and sales manager, Moraine Products division, General Motors Corp., Dayton, is treasurer, and WILLIAM S. WOLF-



BURNETT BEAR, whose appointment as manager of the Cleveland fabricating contracting division of Bethlehem Steel Co. was announced in these columns two weeks ago.

RAM, engineer, Inland Mfg. division, General Motors Corp., Dayton, is secretary.

♦ ♦ ♦

H. B. KRAUT, president of the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., has been elected a director of the Wisconsin Power & Light Co., Madison, Wis., which serves the area and a large part of central Wisconsin.

♦ ♦ ♦

W. A. VENSEL has been made West Coast manager of the newly opened branch office of the Detroit Rex Products Co., Detroit. He will make his headquarters at 111 Sutter Building, San Francisco.

...OBITUARY...

ARTHUR P. VAN SCHAIK, vice-president in charge of sales, American Chain & Cable Co., Bridgeport, Conn., died on June 8 while traveling from New Orleans to Chicago on the Panama Limited. Mr. Van Schaick, who was 56 years old, was also a director of the American Chain & Cable Co., a director of the Chain Institute, and former president of the American Hardware Manufacturers Association.

He attended Williams College and obtained his early business experience with the Pittsburgh Plate Glass Co. and the Lackawanna Steel Co., becoming associated with the American Chain Co. in 1919 as manager of sales at Bridgeport, Conn. Mr. Van Schaick's residence was Southport, Conn., but he was a frequent visitor to Chicago.

♦ ♦ ♦

THEODORE AHRENS, for 30 years president of the American Radiator

FOR *Economy*
IN OPERATION



THE ERIE *Board* DROP

•Again, Erie's 35 years of experience in designing and building forging hammers proves of value to you . . . Into the Erie Board Drop Hammer has been designed and built the same ruggedness you find in all Erie Hammers. This gives you the reliability and ruggedness of the heaviest Erie Steam Drop Hammers. The result . . . economy in operation which no forge shop man can afford to overlook. Erie Board Drop Hammers are rated from 400 to 7500 lbs. . . . Complete details on modern Erie Board Drop Hammers await you . . . Write today for facts on how to effect greater economy in your forge shop by use of the Erie Board Drop.

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& Standard Sanitary Corp., and predecessor companies, New York, died in Louisville, Ky., on June 12, aged 79 years. He went to work in his father's brass foundry after his graduation from the Louisville public schools at the age of 13. Five years later he went East to work as a mechanic. Returning to his native city at 21, he entered the contracting plumbing business under the firm name of Ahrens, Welker & Ryan. Mr. Ahrens later purchased an interest in

his father's business and in 1886 helped organize the Ahrens & Ott Mfg. Co. About 1900 he consolidated 10 manufacturers of plumbing fixtures into the Standard Sanitary Mfg. Co., of which he was president until 1936, when he resigned to become chairman of the board.

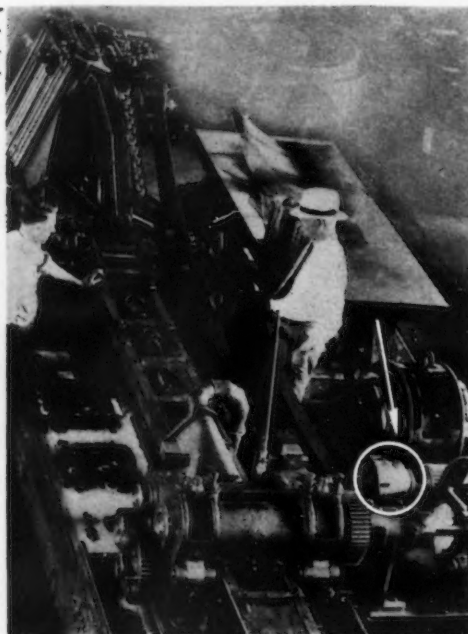
Mr. Ahrens was a firm believer in the system of indentured apprenticeship and donated \$500,000 toward establishing the Theodore Ahrens Trade School in Louisville. He also endowed

a chair of ventilation and plumbing at Carnegie Institute of Technology.

♦ ♦ ♦

CHARLES SEWARD WILCOX, chairman of the board of the Steel Co. of Canada, died at his home at Hamilton, Ont., on June 6. He was born in Painesville, Ohio, 82 years ago. After his graduation from the Sheffield Scientific School of Yale University in 1879, he took his first job with the Ontario Rolling Mill Co., at Hamilton, by 1890 was its general manager, and continued in this capacity when it became the Hamilton Steel & Iron Co. In 1910 he became presi-

Stearns Magnetic Clutch (indicated by arrow) was found most efficient for controlling the operation of this intricate lath making machine.



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dent of the Steel Co. of Canada, which was formed by the merger of the Hamilton Steel & Iron Co., the Canadian Screw Co., the Canada Bolt & Nut Co., the Montreal Rolling Mills Co., and the Dominion Wire Mfg. Co. He became chairman of the board in 1932.

♦ ♦ ♦

HAROLD W. BROWN, assistant treasurer of the Detroit Electric Furnace Co., died June 9 at his home. He was 43 years old.

♦ ♦ ♦

HENRY TIFFANY COLE, chairman of the board of the United States Radiator Corp., died June 7 at his home, Grosse Pointe, Mich. Born in Cleve-

land in 1870, Mr. Cole went to Detroit in 1877 and received his formal education in the Detroit public schools. His business career was started with the old H. Scherer & Co., wholesale carriage hardware dealers. In 1893 he went with the Capitol Heater Co. as treasurer. In 1897 he was elected secretary of the United States Heater Co., an outgrowth of the Capitol company and in 1902 was named vice-president. In 1910 the company, with five others, was consolidated into the United States Radiator Corp., of which he was board chairman until his death.

♦ ♦ ♦

FRED H. BEGOLE, retired president of the Lake Shore Engine Works, Marquette, Mich., and former mayor of Marquette, died June 9 at the age of 71 from a heart attack.

♦ ♦ ♦

HARRY E. HARVEY, who from 1932 to 1935 was vice-president and general manager of Standard Tube Co., of Detroit, died in St. Petersburg, Fla., on June 7. Since he became ill in 1936, Mr. Harvey had spent a great deal of time in Florida. He was 55 years old and formerly lived in Birmingham, Mich.

♦ ♦ ♦

STANTON L. DREIFUS, an executive of the specialties department of the Schiavone-Bonomo Corp., New York, scrap broker and dealer, died suddenly on June 11 at the age of 51. He had been with the company since its inception about 10 years ago and was well known in the trade. Mr. Dreifus was a nephew of Charles L. Dreifus, of the scrap company of the same name in Philadelphia.

♦ ♦ ♦

ALBERT B. WEISSENBORN, one of the founders and president of the Appleton Wire Works, Appleton, Wis., manufacturer of wire screens for paper mills, died on June 3, aged 74 years. The business was established in 1896. Mr. Weissenborn also was president of the Tuttle Press Co., Appleton, and a director of the Northern Paper Mills, Inc., Green Bay, Wis.

Heavy Inventories Threaten To Check British Activity

LONDON—The best analysis of the recession in the British iron and steel industry to be made recently has come from James Frater Taylor, chairman of Pease & Partners, Ltd. He said:

"The present outlook is not quite so good. It is a fact that the number of furnaces in blast has decreased, and I

share the fears of the labor leaders that the number in operation may be still further reduced.

"It must be perfectly clear that there is a limit to the piling up of such commodities as pig iron and to the locking up of money in connection with such stocking up. The difficulties have been accentuated by the heavy pur-



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STANDARD STEEL WORKS CO.
Subsidiary of the Baldwin Locomotive Works
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chases of pig iron, scrap and steel in various forms from abroad. Taking the importation of pig alone, the official figures for the four months ended, April 30, last, show that the excess imported over the corresponding period of the previous year amounted to no less than 209,674 tons.

Prices Are Controlled

"In connection with these outside purchases, you must remember that the prices of pig iron and scrap are controlled, including that purchased from abroad, which is paid for by the steel producer here at a fixed price whatever price may have been paid to the foreign supplier. To those works carrying out the whole course of manufacture from ore to finished steel, the transaction is unfair, as the cost of

their raw materials has risen steadily, whereas the cost of pig iron and scrap, to those companies who use these as their raw materials, is fixed as I have stated.

"I concur entirely with the view that the situation as regards iron and steel must be governed by the needs of the nation. My difficulty is as to the procedure followed.

Government Financing Asked

"From a national viewpoint it would seem reasonable to expect that the Government should provide finance to insure the carrying of reasonably large pig iron and semi-finished steel stocks and the continuance in operation of blast and steelmaking furnaces. Another difficulty would be solved by this means—unemployment.

"I must again voice my belief in real rationalization. Natural mergers still appear to me to be necessary so that having regard to all those interested the most effective operation may be attained. It is vitally essential that costs be lowered and that the export business should not be allowed to go. Low cost operations need not be inconsistent with a reasonable return."

Boston Machinery Show Well Attended

BOSTON.—An attendance of 10,000 and a substantial volume of sales, were reported at the machine tool show held by the Austin-Hastings Co., Inc., Cambridge, Mass., at the Boston Garden Exposition Hall, North Station, Boston, June 8-11. On the last day, Saturday, June 11, the attendance averaged 300 an hour. Included were 150 operators and engineers from the Newport, R. I., torpedo station, 150 members of the Drop Forging Association, a group of 60 from the River works of the General Electric Co., Lynn, Mass., and several other smaller groups. Invitations to visit the exposition were sent to some 5000 New England firms directly or indirectly interested in machinery of the type on display. No other publicity was used.

Sales, as well as attendance, were unusually large for an exhibition of its size. Each of the 30-odd exhibitors booked business—some of them quite substantial business—and reported prospects of further bookings from New England manufacturers as brighter than in years.

The exposition was confined to those lines of machine tools, brakes, shears, rolls and other sheet metal machinery and welding and cutting equipment handled by the Austin-Hastings Co. The welding equipment included electric arc, electric resistance and oxy-acetylene. All machines were demonstrated in actual operation. They were of latest design and some of them had new features not previously announced. An added attraction was the showing of the new United States Steel Corp.'s new technicolor movies of steel manufacture.

National Tool Co., Cleveland, has appointed the Ernest T. Gropler Co., Newark, N. J., to represent the National Tool line of hobs, broaches and other cutting tools in New York State and northern New Jersey. National Tool has not previously been represented in that territory.

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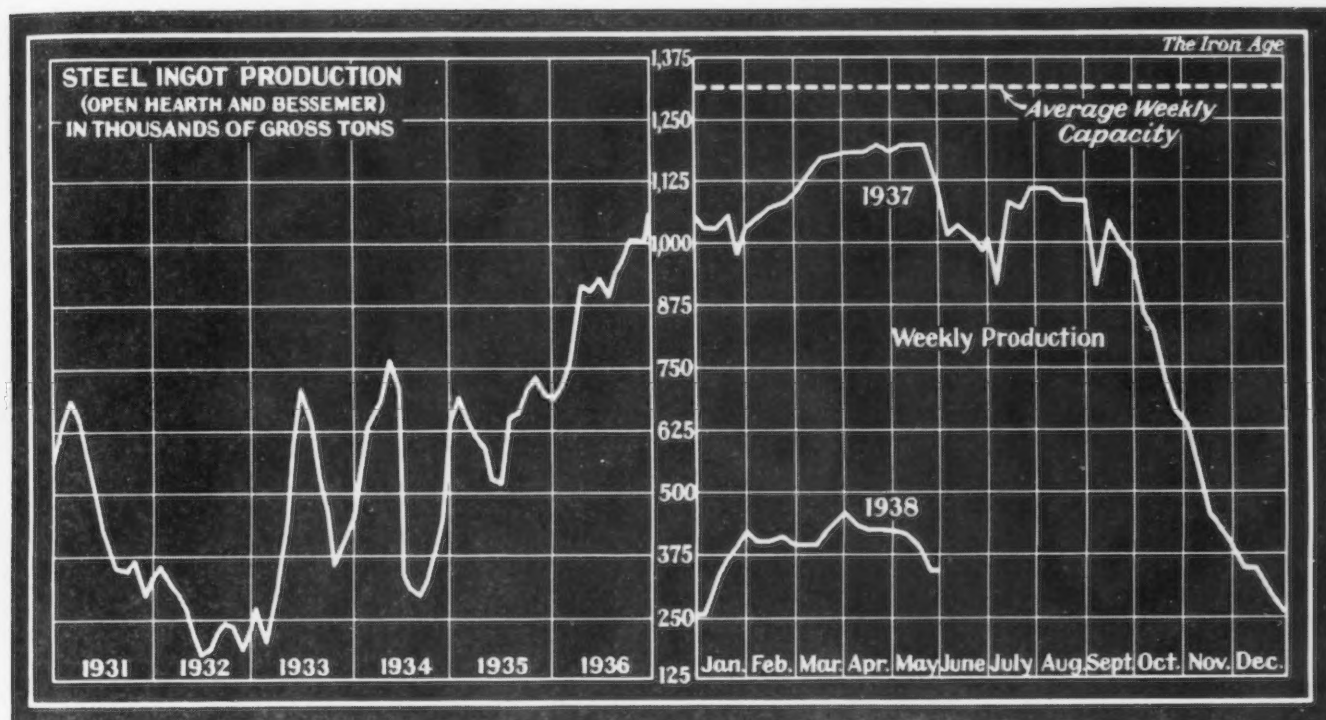
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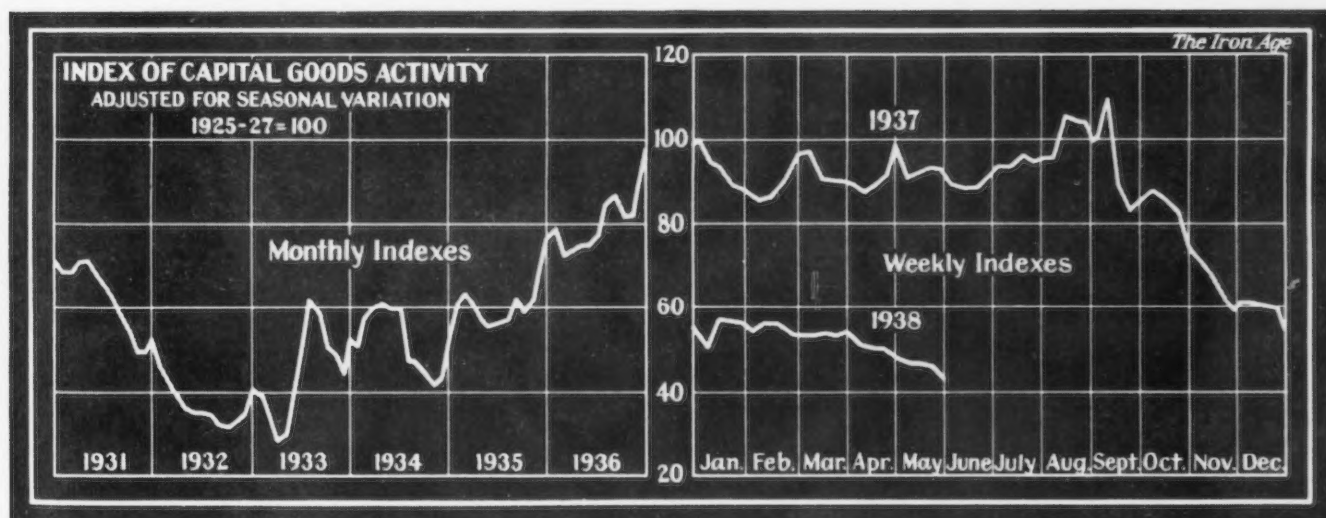


Steel Ingot Output Rate Rises to 26 Per Cent



District Ingot Production, Per Cent of Capacity	CURRENT WEEK...	Pittsburgh	Chicago	Valleys	Philadelphia	Cleveland	Wheeling	Buffalo	Detroit	Southern	S. Ohio River	Western	St. Louis	Eastern	Aggregate
	22.0	23.5	23.0	22.0	22.0	23.0	40.0	28.5	19.5	48.0	20.0	30.0	42.0	10.0	26.0
PREVIOUS WEEK..	18.0	23.0	22.0	22.0	22.0	22.0	42.0	21.5	19.5	52.0	24.0	30.0	42.0	10.0	25.0

Index Recovers Slightly After Holiday Week



SHOWING a slight recovery from the holiday dip, THE IRON AGE index of capital goods activity advanced to 43.4 in the week ended June 11, a gain of 0.4 point over the preceding week. The week's gain was due chiefly to a rebound in automobile assemblies from the abnormal decline in the holiday week, and to a less-than-seasonal loss in lumber carloadings for the week. Despite the gain in automobile assemblies, the total for the week ended June 11 of 40,175 units, is 4925 below the pre-holiday week. Reduced steel mill schedules and lower volume of originating shipments forced the index of the Pittsburgh series down 3.1 points to the level of late October, 1934.

	Week Ended June 11	Week Ended June 4	Comparable Week	
			1937	1929
Steel ingot production ¹	32.6	32.1	104.2	137.0
Automobile production ²	36.0	28.6	106.3	131.1
Construction contracts ³	57.8	61.1	58.1	118.9
Forest products carloadings ⁴	48.5	47.7	67.1	121.6
Production and shipments, Pittsburgh District ⁵	42.2	45.3	103.6	128.5
Combined index.....	43.4	43.0	87.9	127.4

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh.

...SUMMARY OF THE WEEK...

... Ingot output increases slightly at major producing centers.

o o o

... Pennsylvania Railroad authorizes 1000 cars, Santa Fe buys rails.

o o o

... Fluctuating galvanized sheet price set at 3.65c. Pittsburgh.

THE steel industry finds itself in a somewhat more cheerful position this week than last, with June business running slightly ahead of May for some producers and the national ingot rate up a point to 26 per cent.

Evidence pointing to any considerable run-up in steel mill operations this summer is scanty, yet prospects for structural steel business are brightening; the automotive industry, contrary to expectations, is now planning to operate most of the summer, and steel sellers report a more diversified demand for many steel products.

Most of the principal steel-producing centers are more active than a week ago with Pittsburgh's rate up four points to 22 per cent, Chicago up a half point to 23½, the Cleveland and Youngstown areas each up a point to 23 per cent and Buffalo up seven points to 29½.

More encouraging than the dull summer now in prospect for steel is a longer range view into the fall months when the shipbuilding and construction industries, aided by Government funds, will get into fuller swing and other important outlets for steel become more active. The new PWA program is expected to take \$90,000,000 worth of steel, with the first orders to be placed in several months; 78,000 tons of steel will be required for 21 ships the Maritime Commission expects to contract for within six months, and the Navy's billion dollar expansion program is expected to require 108,750 tons of plates, 36,990 tons of shapes and 7580 tons of bars. New York City's planning commission has for approval a \$223,000,000 program calling for 227 school buildings, needing 103,000 tons of structural shapes within six years.

American Bridge Co. this week was awarded 11,700 tons of fabricated plates and shapes for Metropolitan Life Insurance Co.'s new office building in New York, while Concrete Steel Co.

will furnish 1300 tons of bars for a General Foods Corp. building at Hoboken, N. J. Structural steel lettings this week total 22,500 tons compared with 18,750 tons last week, the Metropolitan award accounting for more than half. Another sizable award is 1195 tons for a power house at Guntersville, Ala., for the TVA. New projects are 20,900 tons against 16,785 tons a week ago, the largest jobs including a parcel post building at Los Angeles, requiring 2000 to 5000 tons; North Beach Airport, N. Y., hangars and other buildings, 3400 tons; Cross Bay Parkway, Queens, N. Y., 2500 tons; Queens-Midtown Tunnel, 1500 tons for a ventilation building; and an American Viscose Co. plant at Nitro, W. Va., 1500 tons.

RAILROAD buying improved this past week when the Pennsylvania authorized construction of 1000 70-ton gondola cars and 20 locomotives, utilizing more than 12,000 tons of steel, and the Santa Fe bought 9500 tons of rails and track fastenings.

Entry of some automobile industry suppliers into the market for steel aroused hopes that buying will be resumed on a broader scale at Detroit where the anticipated summer shutdown is expected to last only three weeks. Statistics interesting to steel manufacturers were not encouraging, United States Steel Corp. finished steel shipments declining 38,891 tons in May to 465,081 tons compared with 1,034,039 tons in May of 1937 and the National Machine Tool index, with 1926 at 100 as a base, dropping in May to 66.7 from 90.3 in April.

Steel news from abroad found heavy inventories threatening a further decline in British ingot production. British steel leaders are urging the Government to finance carrying of large pig iron and semi-finished stocks made necessary by rearmament. Toronto reports Britain planning to place \$200,000,000 of munitions and war materials orders in Canada where industry generally is reported on the upgrade.

Prices continued in the forefront of domestic steel developments with several makers of galvanized sheets acting after several weeks of uncertainty to quote definite prices of 3.65c. a lb., Pittsburgh, and 3.75c. Chicago, a reduction of \$3 a ton in the published prices but higher than the figures at which this product has been sold recently.

Recent heavy sales of American scrap for export apparently have had little effect on scrap prices, which remain unchanged this week on all principal grades at all leading centers. For the second week THE IRON AGE composite scrap price stands at \$11, lowest in almost three years.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	June 14, 1938	June 7, 1938	May 17, 1938	June 15, 1937
Rails, heavy, at mill.....	\$42.50	\$42.50	\$42.50	\$42.50
Light rails, Pittsburgh.....	43.00	43.00	43.00	43.00
Rerolling billets, Pittsburgh.....	37.00	37.00	37.00	37.00
Sheet bars, Pittsburgh.....	37.00	37.00	37.00	37.00
Slabs, Pittsburgh.....	37.00	37.00	37.00	37.00
Forging billets, Pittsburgh.....	43.00	43.00	43.00	43.00
Wire rods, Nos. 4 and 5, P'gh.....	47.00	47.00	47.00	47.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb....	2.10	2.10	2.10	2.10

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	2.45	2.45	2.45	2.45
Bars, Chicago.....	2.50	2.50	2.50	2.50
Bars, Cleveland.....	2.50	2.50	2.50	2.50
Bars, New York.....	2.81	2.81	2.81	2.78
Plates, Pittsburgh.....	2.25	2.25	2.25	2.25
Plates, Chicago.....	2.30	2.30	2.30	2.30
Plates, New York.....	2.55	2.55	2.55	2.53
Structural shapes, Pittsburgh.....	2.25	2.25	2.25	2.25
Structural shapes, Chicago.....	2.30	2.30	2.30	2.30
Structural shapes, New York.....	2.52	2.52	2.52	2.5025
Cold-finished bars, Pittsburgh.....	2.90	2.90	2.90	2.90
Hot-rolled strip, Pittsburgh.....	2.30	2.30	2.40	2.40
Cold-rolled strip, Pittsburgh.....	3.10	3.10	3.20	3.20
Sheets, galv., No. 24, P'gh.....	3.65	3.80	3.80	3.80
Sheets, galv., No. 24, Gary.....	3.75	3.90	3.90	3.90
Hot-rolled sheets, Pittsburgh.....	2.30	2.30	.....	.....
Hot-rolled sheets, Gary.....	2.40	2.40	.....	.....
Cold-rolled sheets, Pittsburgh.....	3.35	3.35	.....	.....
Cold-rolled sheets, Gary.....	3.45	3.45	.....	.....
Wire nails, Pittsburgh.....	2.75	2.75	2.75	2.75
Wire nails, Chicago dist. mill.....	2.80	2.80	2.80	2.80
Plain wire, Pittsburgh.....	2.90	2.90	2.90	2.90
Plain wire, Chicago dist. mill.....	2.95	2.95	2.95	2.95
Barbed wire, galv., P'gh.....	3.40	3.40	3.40	3.40
Barbed wire, galv., Chicago dist. mill.....	3.45	3.45	3.45	3.45
Tin plate, 100-lb. box, P'gh.....	\$5.35	\$5.35	\$5.35	\$5.35

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	June 14, 1938	June 7, 1938	May 17, 1938	June 15, 1937
No. 2 fdy., Philadelphia.....	\$25.84	\$25.84	\$25.84	\$25.76
No. 2, Valley furnace.....	24.00	24.00	24.00	24.00
No. 2, Southern Cin'tl.....	23.89	23.89	23.89	23.69
No. 2, Birmingham.....	20.38	20.38	20.38	20.38
No. 2, foundry, Chicago*.....	24.00	24.00	24.00	24.00
Basic, del'd eastern Pa.....	25.34	25.34	25.34	25.26
Basic, Valley furnace.....	23.50	23.50	23.50	23.50
Malleable, Chicago*.....	24.00	24.00	24.00	24.00
Malleable, Valley.....	24.00	24.00	24.00	24.00
L. S. charcoal, Chicago.....	30.34	30.34	30.34	30.04
Ferromanganese, seab'd, car-lots.....	102.50	102.50	102.50	102.50

†This quotation is subject to a deduction of 38c. a ton for phosphorus content of 0.70 per cent or higher.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh.....	\$10.75	\$10.75	\$11.50	\$18.25
Heavy melting steel, Phila.....	12.00	12.00	12.00	17.25
Heavy melting steel, Ch'go.....	10.25	10.25	10.75	15.75
Carwheels, Chicago.....	12.00	12.00	12.50	18.25
Carwheels, Philadelphia.....	14.75	14.75	14.75	19.75
No. 1 cast, Pittsburgh.....	13.25	13.25	13.75	18.25
No. 1 cast, Philadelphia.....	14.25	14.25	14.25	20.25
No. 1 cast, Ch'go (net ton).....	10.25	10.25	10.75	15.25
No. 1 RR. wrot., Phila.....	15.25	15.25	15.25	19.75
No. 1 RR. wrot., Ch'go (net).....	7.75	7.75	8.25	14.50

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt.....	\$3.75	\$4.00	\$4.00	\$4.60
Foundry coke, prompt.....	4.75	5.00	5.00	5.25

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn.....	9.00	9.00	10.00	14.00
Lake copper, New York.....	9.125	9.125	10.125	14.125
Tin (Strait), New York.....	38.70	38.75	36.375	54.625
Zinc, East St. Louis.....	4.00	4.00	4.00	6.75
Zinc, New York.....	4.39	4.39	4.39	7.10
Lead, St. Louis.....	3.85	3.85	4.35	5.85
Lead, New York.....	4.00	4.00	4.50	6.00
Antimony (Asiatic), N. Y.....	14.00	13.75	14.75	14.75

The Iron Age Composite Prices

Finished Steel

June 14, 1938
One week ago
One month ago
One year ago

2.487c. a Lb.
2.487c.
2.512c.
2.512c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	High	Low
1938.....	2.512c., Mar. 9	2.249c., Mar. 2
1937.....	2.249c., Dec. 28	2.016c., Mar. 10
1936.....	2.062c., Oct. 1	2.056c., Jan. 8
1935.....	2.118c., Apr. 24	1.945c., Jan. 2
1934.....	1.953c., Oct. 3	1.811c., Apr. 18
1933.....	1.915c., Sept. 6	1.877c., Jan. 12
1932.....	1.981c., Jan. 13	1.883c., Dec. 29
1931.....	2.192c., Jan. 7	1.962c., Dec. 9
1930.....	2.223c., Apr. 2	2.192c., Oct. 29
1929.....	2.192c., Dec. 11	2.142c., July 10
1928.....	2.402c., Jan. 4	2.212c., Nov. 1
1927.....		

Pig Iron

\$23.25 a Gross Ton
23.25
23.25
23.25

Based on average basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern Iron at Cincinnati.

	High	Low
1938.....	\$23.25, Mar. 9	\$20.25, Feb. 16
1937.....	19.73, Nov. 24	18.73, Aug. 11
1936.....	18.84, Nov. 5	17.83, May 14
1935.....	17.90, May 1	16.90, Jan. 27
1934.....	16.90, Dec. 5	13.56, Jan. 3
1933.....	14.81, Jan. 5	13.56, Dec. 6
1932.....	15.90, Jan. 6	14.79, Dec. 15
1931.....	18.21, Jan. 7	15.90, Dec. 16
1930.....	18.71, May 14	18.21, Dec. 17
1929.....	18.59, Nov. 27	17.04, July 24
1928.....	19.71, Jan. 4	17.54, Nov. 1

Steel Scrap

\$11.00 a Gross Ton
11.00
11.42
17.08

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	High	Low
1938.....	\$14.00, Jan. 4	\$11.00, June 7
1937.....	21.92, Mar. 30	12.92, Nov. 16
1936.....	17.75, Dec. 21	12.67, June 9
1935.....	13.42, Dec. 10	10.33, Apr. 23
1934.....	13.06, Mar. 13	9.50, Sept. 25
1933.....	12.25, Aug. 8	6.75, Jan. 3
1932.....	8.50, Jan. 12	6.43, July 5
1931.....	11.33, Jan. 6	8.50, Dec. 29
1930.....	15.00, Feb. 18	11.25, Dec. 9
1929.....	17.58, Jan. 29	14.08, Dec. 3
1928.....	16.50, Dec. 31	13.08, July 2
1927.....	15.25, Jan. 17	13.08, Nov. 22

...PITTSBURGH...

... Ingot production rate up four points as June bookings show slight gain over May ... Galvanized sheet price set at 3.65c. ... Structural business prospects brighter for summer.

PITTSBURGH, June 14.—Representing an advance on recent concessions but a decline of three dollars a ton from present nominal quotations, several producers are quoting 3.65c. per lb. base on galvanized sheets effective immediately for third quarter delivery. No changes in extras or deductions have been made.

Further balancing of production against incoming business has lifted the Pittsburgh ingot rate four points to 22 per cent of capacity. Periodic accumulations of raw steel stock presage a continuation of irregular steel productions. Wheeling-Weirton district has dropped two points to 40 per cent.

New steel business, if anything, is in slightly better volume than a week ago and total orders so far this month are about 3 to 7 per cent ahead of those booked in the same number of days last month.

Structural business continues to hold brightest possibilities for summer months. American Bridge Co. was awarded a contract for a Metropolitan Life Insurance building at New York involving 11,700 tons. The Pennsylvania Railroad car building program will consume from 12,000 to 15,000 tons of steel, and it is probable that the Southern Railway tonnage, which has been held up pending railroad legislation, may materialize in the near future.

Tin plate operations continue a contraseasonal decline and are now a shade below 40 per cent. Although aggregate tonnage of orders being booked has not increased much recently a wider diversification has been

noted, which to some extent is undoubtedly due to inventory depletion.

Pig Iron

With moderate sized sales few and far between, demand continues irregular and spotty. The present volume of business can hardly be said to represent a test of current prices.

Semi-Finished Steel

Without practical significance, semi-finished steel demand was off somewhat this past week. The irregularity of bookings from non-integrated mills reflects sluggishness in various finished steel markets.

Bars, Plates and Shapes

Total hot rolled bar business is still under aggregate bookings at this time last month and current demand is exceptionally dull. Structural shape and plate projects, while no more numerous, involve slightly increased tonnages. American Bridge Co., Pittsburgh, was awarded 11,700 tons of fabricated plates and shapes for a Metropolitan Life Insurance Co. building, New York City.

Reinforcing Bars

Concrete Steel Co., New York, will furnish 1300 tons of bars for a General Foods Corp. building at Hoboken, N. J. Largest inquiry in the past week is for 1500 tons for a Queens, N. Y., boulevard project. Prices continue soft in some sections of the country and range from \$2.20 to \$2.45 a 100 lb. f.o.b. Pittsburgh to contractors, depending on the location and size of the job. Isolated cases of jobs going for less than this have occurred.

Sheets and Strip

Large producers are quoting 3.65c. a lb. base f.o.b. Pittsburgh on galvanized sheets for third quarter, which reflects a cut of \$3 a ton from present nominal quotations. No change has been made in the extras or deductions. On flat sheets there is a \$2 a ton functional allowance, while on formed galvanized roofing products a combination of functional and quantity allowances amounts to \$6 a ton. As the 3.65c. base price meets a competitive situation it is effective immediately. Demand for other sheet products is a trifle improved but total tonnages are not large. Additional automotive clean-up buying has materialized and small tonnages for initial try-outs on the 1939 series, from at least one motor maker, are expected the latter part of this month.

Tin Plate

Continuing its contraseasonal downward trend, tin plate production is estimated this week at a shade less than 40 per cent.

Wire

In sharp contrast to demand for other steel products, total wire sales are holding up exceptionally well and in some cases are somewhat ahead of bookings for the corresponding number of days last month. Prices on merchant wire products are firmer than a few weeks ago. Wire nails to the trade are going at from 2.55c. to 2.75c. a lb. f.o.b. Pittsburgh, depending on the territory and the amount purchased, with other merchant products moving relative to wire nails.

Tubular Goods

Tubular goods sales so far this month are running less than sales during the same period last month. Oil-country goods producers are watching closely the progress of a suggested plan to pro-rate oil production on the basis of fields rather than wells. Such a move, should it occur, would have some effect on pipe production.

Weekly Booking of Construction Steel

	Week Ended				Year to Date	
	June 14, 1938	June 7, 1938	May 17, 1938	June 15, 1937	1938	1937
Fabricated structural steel awards	22,500	18,750	4,500	15,600	319,945	570,165
Fabricated plate awards	660	3,975	1,460	195	61,930	72,380
Steel sheet piling awards	0	900	0	430	15,825	26,700
Reinforcing bar awards	5,025	2,660	5,730	5,150	100,375	104,385
Total Lettings of Construction Steel...	28,185	26,185	11,690	21,375	498,075	773,630

... CHICAGO ...

... Ingot output gains fractionally but general demand is little improved ... Santa Fe awards 9500 tons of rails and fastenings ... Farm implement activity momentarily lower.

CHICAGO, June 14.—District steel mill operations have advanced one-half point to 23½ per cent of capacity, one mill registering a decline and two showing slight gains. Two more blast furnaces have been blown out since the first of the month, only nine of 39 producing iron at present.

With the partial clarification of the galvanized situation, some hope is being held for a general stabilization of this market. Many buyers have encountered price weaknesses in recent months, especially in galvanized sheets, roofing sheets, reinforcing bars, shapes, and bolts and nuts. Conditions are such that even greatly reduced prices are not resulting in increased business.

Demand for steel is unimproved generally. The Santa Fe released 9500 tons of rails and fastenings to the Colorado mill, and some other railroad buying is expected by steel sellers here. Farm implement activity, though lessening at the moment, is expected to be the highest since 1930, with the exception of last year's record volume. High farm income, coupled with a large amount of unfilled equipment needs in rural regions, is expected to bring about this result. For the six months ended April 30, one leading manufacturer reported a drop in domestic sales of 13 per cent, while another reported tractor orders off 34 per cent. Foreign interest is being well maintained.

The City Council of Chicago has voted to proceed with the subway programs outlined here a few weeks ago provided that Federal money is made available to the city. Engineers revealed last week that when construction begins, the relocation and expansion of many of the water and gas mains below the street surface will call for a considerable tonnage of cast iron pipe, in addition to the structural and reinforcing steel requirements mentioned previously.

The Walworth Co. strike at Kewanee, Ill., was settled last week when 1300 employees voted nearly two to one to accept a 10 per cent wage cut and return to work.

Structural Shapes and Reinforcing Bars

Prices of many recent fabricated shape contracts have been so low that admittedly little or no profit has been realized. New projects both in shapes and bars are fairly numerous but the aggregate tonnage is unimpressive.

Plates

Other than a few scattered orders from car builders for miscellaneous requirements, plates are in demand only by structural fabricators. Prices generally are firm.

Sheets and Strip

Several sellers in this district are quoting in answer to definite inquiries on galvanized sheets and formed roofing a base of 3.65c. Pittsburgh and 3.75c. Chicago, jobber discounts and extras being unchanged. This, in some measure, clears the uncertainties of the past three weeks with regard to this grade of sheet. Since business has been taken here at 3.60c. Chicago, the new base will amount to an increase of \$3 a ton to those who bought at this low price. A formal announcement of the 3.65c. Pittsburgh base is not anticipated, although a leading producer may, by so informing its trade, create such an effect.

Bars

Specifying from the farm equipment makers is continuing at an average rate with tractor interest tending downward. An increase in the activity of these plants is looked for later in the summer, as cash income from the large crops reaches the surrounding rural areas. Motor car buying still lags but some buying for 1939 models is being predicted for August.

Wire and Wire Products

Farm buying dominates wire order books in this district, while industrial sales continue low. Price difficulties have been few here in this line of steel products.

Pig Iron

A slight but insignificant increase in shipments is being noticed by some

sellers. Inventory replenishment is accounting for this movement since no particular interest is being shown by major consuming groups.

..BIRMINGHAM..

... Steel bookings in South reported slightly heavier.

BIRMINGHAM, June 14.—Steel bookings last week were better than for some weeks past. This new business centered chiefly on structural shapes, bars, plates and sheets. However, the general trend of the market is about the same and it is not expected to change much during the summer.

The Ensley rail mill, expected to close last week, has continued operations for a short time longer, probably through this week. New pig iron business is light and shipments are restricted. Last week 12 open hearths were active, five being at Fairfield, three at Ensley and four at Gadsden. The same schedules are planned for this week.

Tennessee Coal, Iron & Railroad Co. blew out Ensley No. 5 on June 10, leaving that company with only three active stacks. The total for the district is now six. The other producers are Woodward Iron, Sloss-Sheffield and Republic Steel, with one each.

...CINCINNATI...

... Sheet demand shade higher; ingot output off to 18%.

CINCINNATI, June 14.—While current sheet steel demand is not buoyant sales the past week were up a few points to about 35 per cent of capacity. Since automobile manufacturers are virtually absent from the market the fact that the present demand is being supported by miscellaneous sources has sustained mill optimism against the time when the car industry returns to the market. Some buying for new car models is expected before the end of June. The jobbing demand, particularly in galvanized sheets, continues to be an outstanding feature of the local market.

Production of ingot steel is down a few points this week to about 18 per cent of market capacity. Only two interests are pouring steel, each with three open hearths in operation. There are 34 furnaces in the district.

Alfred P. Sloan, Jr., Not Optimistic For Motor Industry's Immediate Future

PREDICTING that the 1939 model season for the automobile industry, starting next Nov. 1, may be approximately equivalent to the low period of the previous depression, 1932, Alfred P. Sloan, Jr., chairman of General Motors Corp., in a letter to stockholders, said it is "difficult to see how the automotive industry in the immediate future can contribute anything to the national economy by way of increasing employment, either within itself or through its supplying industries."

"When there will occur a change in the present course of business," said Mr. Sloan, "is entirely a matter of conjecture. The so-called 'recession' has become, in fact, a 'depression.'"

As to the causes for the present situation, Mr. Sloan said: "The national economy has become unstabilized due to too rapid an increase in wages and too rapid a shortening of hours in many key industries—purchasing power has thus become unbalanced in relation to prices. Superimposed upon this is the fact that there has been developing a growing lack

of confidence and a fear as to the future opportunities of American business enterprise due to the attitude of the Government toward business, as well as to economic policies that have been enacted as affecting the national economy and penalizing the operating effectiveness of industry.

"Naturally, the sound remedy lies in the elimination of the causes. Regrettable as it is, there is lacking any such realistic approach to the problem. The policy apparently is to ignore largely the inherent causes of the depression and to attempt to offset them by the creation of further credit where there is already a superabundance even to the extent that it cannot be used, and to embark upon a program of large Governmental expenditure in unproductive enterprise, instead of eliminating the embargoes that now prevent the investment of very large sums in private enterprise. There certainly is nothing in the picture to warrant optimism so far as the immediate future of industry is concerned, or to establish any confidence as to an intelligent solution of our difficulties."

E. T. Weir Says Steel Prices Not Too High

"IF steel companies are to avoid complete ruin, they cannot reduce prices unless costs are brought down also," said Ernest T. Weir, chairman of National Steel Corp. in a letter to a Pittsburgh newspaper, one of whose columnists had criticized steel prices. Mr. Weir presented arguments to show that steel prices are not too high in relation to present costs.

"The suggestion has been made," he said, "that the steel companies should reduce prices even if it means heavier losses, in the hope that lower prices will stimulate volume. The experience of the steel industry is quite clear on that point. It shows that under conditions such as now exist in business price cuts in steel do not bring out more orders.

"The real facts are that the price of steel is a small factor in the total cost of a finished article, and consequently it is not the controlling factor in the price of such article.

"Take for example the automotive

and refrigerator industries. Sales are off for both of these not because of the price of steel but because general business is depressed, and consumers' buying power is curtailed. In addition, there is a lack of disposition on the part of the public to buy in the face of existing uncertainties. The price of steel has nothing to do with it."

CAST IRON PIPE.

Jersey City, N. J., has awarded 300 tons of various sizes of pipe to Warren Foundry & Pipe Co., Phillipsburg, N. J.

New York will take bids on approximately 8000 tons of pipe in July.

Boston is considering bids on 2940 ft. of 8-in. and 4330 ft. of 12-in. pipe. United States Pipe & Foundry Co. is low bidder, but there is a question of deliveries.

Salem, Mass., has awarded 225 tons of 6, 8, 12 and 16-in. pipe to R. D. Wood Co.

Malden, Mass., has closed bids on 200 tons of 6 to 12-in. pipe. French interests submitted the lowest bid; the United States Pipe & Foundry Co. is low domestic bidder.

Narragansett, R. I., has earmarked \$283,618 for a contemplated water system, and is waiting approval of a PWA \$209,382 grant, the total appropriation being \$493,000.

De Soto, Kan., plans pipe lines for water system and other waterworks installation. Cost about \$48,000. Financing is being ar-

anged through Federal aid. Shockley Engineering Co., Graphic Arts Building, Kansas City, Mo., is consulting engineer.

Sandusky, Ohio, plans about 18,000 lin. ft. of 20 and 24-in. pipe for extensions in water system; also new main intake line for city water supply, filtration plant and other waterworks installation. Cost about \$800,000. Greeley & Hansen, 6 North Michigan Avenue, Chicago, are consulting engineers.

Birmingham Water Works, Birmingham, plans several miles of 16 to 30-in. pipe for extensions in water system at Tarrant City and East Lake, near Birmingham; also new pumping station, water filtration plant and other waterworks equipment. Cost close to \$400,000. H. B. Richards is general manager.

Lawton, Okla., plans extensions and improvements in water pipe lines; also other waterworks installation. Cost about \$60,000. A bond issue is being arranged.

Wallowa, Ore., plans about 8000 lin. ft. of main pipe line for water system; also about 1250 ft. of 6-in., and 4600 lin. ft. of 4-in. for lateral lines. Financing is being arranged through Federal aid.

Supervising Construction Engineer, Indian Service, Billings, Mont., closes bids June 20 for cast iron sewer pipe and fittings; also for mild steel pipe, wrought iron pipe, malleable iron pipe fittings, gate valves, unions, nipples, etc., for use at Dixon, Mont.

Parker & Hill, Smith Tower Building, Seattle, consulting engineers, are in charge of new water district now being organized to install water systems in several communities in Skagit Valley area, including Anacortes, Big Lake, Sedro-Woolley, McMurray, Burlington and other municipalities. Water source will be from Deer Creek, near Mount Vernon. Project will include main and distributing lines, pumping stations and other waterworks facilities. Cost about \$1,200,000. Financing will be arranged through Federal aid.

Abilene, Tex., plans water pipe line extensions; also additions and improvements in filtration plant and other waterworks installation. Cost about \$400,000. Financing will be arranged through Federal aid. Hawley, Freese & Nichols, Capps Building, Fort Worth, Tex., are consulting engineers. R. C. Hoppe is city engineer.

Marquette, Mich., plans extensions in water pipe lines in Piqua and neighboring districts. Alvord, Burdick & Howson, 20 North Wacker Drive, Chicago, are consulting engineers.

El Dorado, Tex., plans pipe lines for water system and other waterworks installation. Fund of \$120,000 is being arranged through Federal aid for this and sewage system. Koch & Fowler, Great National Life Building, Dallas, Tex., are consulting engineers.

Highland Park Utility District, Bakersfield, Cal., will use 12,000 ft. of 4 and 6-in. pipe awarded to United States Pipe & Foundry Co., San Francisco, through contractor.

United States Treasury Procurement Office, San Francisco, has awarded 128 tons of cement-lined 6-in. pipe to United States Pipe & Foundry Co., San Francisco.

Van Norman Buys Producto Machine Co.

THE Van Norman Machine Tool Co., Springfield, Mass., has purchased the business of the Producto Machine Co. of Bridgeport, Conn., and all of the machines formerly made by Producto will be made by the Van Norman company. Contract has been let covering the erection of a plant 140 x 50 ft. adjacent to the present Van Norman plant in Springfield for housing the Producto division.

... CLEVELAND ...

*... Mill operations rise in Ohio steel-making areas ...
Increase in number of orders indicates consumers inventories are low ... Automotive suppliers begin buying.*

CLEVELAND, June 14.—Incoming orders remain light but have been holding up better than expected so far this month. The numerical volume clearly indicates the low state of consumer inventories.

After long consideration by producers, the base price on galvanized sheets has been reduced \$3 a ton to 3.65c., Pittsburgh. As in other products in the secondary market, weaknesses have been noticeable recently in galvanized prices. Action toward firming up prices on reinforcing bars and merchant wire products may be forthcoming soon. Bending charges have been lowered \$3 per ton.

Its significance at this time is doubtful, yet the fact remains that the automotive industry and its suppliers have been mildly more active. Shipments to cold rollers have improved. Two General Motors subsidiaries have bought steel recently and while ostensibly this will be used to round out production on current models, some of the material may be used for 1939 cars. Several small tonnages have been placed for tin mill black as a hedge against the new price setup effective July 1.

Ingot output is up one point to 23 per cent this week in both the Youngstown and Cleveland-Lorain districts.

Pig Iron

The volume of small orders so far this month has been better than expected and has maintained new business at approximately the level prevailing in the corresponding part of May. This is a further indication of the low extent of consumer inventories. Many production and jobbing foundries are well slowed down. At the recent plumbers' convention here, producers of cast iron pressure and soil pipe were optimistic because of prospects for Government expenditures.

Sheets and Strip Steel

Galvanized sheets are being quoted at 3.65c., Pittsburgh, for third quarter, representing an advance from some of the irregularly low levels prevailing recently, and a reduction of \$3 per ton from recent published quotations. Two automobile manu-

facturing units of General Motors have bought moderate tonnages of steel recently and, while uncertainty continues to surround their plans for the immediate future, at least some of the material is expected to be used for the next series of models. Orders from some of automobile industry's suppliers have been more numerous here recently. A few moderate tonnages of sheets have been placed by miscellaneous consumers desirous of stocking prior to July 1 when the new sheet and strip setup goes into effect.

Wire and Wire Products

Incoming business is lighter in volume, due to the combination of seasonal influences and the uncertain industrial outlook. Reports of price weaknesses in the secondary merchant wire products market continue to be heard, but so far have not been seri-

ous enough to bring about any widespread change. The secondary market in this vicinity is firmer than a month ago. Quotations on manufacturers' wire and rods are firm.

Bolts, Nuts and Rivets

Orders and shipments have shown very little change from the low levels prevailing during other recent weeks. Although the automotive industry has been conspicuous by its absence, some optimism has been created through the proposed Pennsylvania Railroad car building program and the fact the Government shipbuilding program is slowly developing. While prices are spotty in a few localities, published quotations are unchanged.

Bars, Shapes and Plates

Merchant bar prices are holding up well, but weakness in reinforcing bar quotations is noticeable in many parts of the nation. Some producers have reduced bending charges \$3 per ton and increased the range for lower quotations on engineering charges. The City of Akron will take bids June 28 on another standpipe involving 310 tons of plates. Buildings for the Veterans' Administration at Dayton, Ohio, will require 285 tons of fabricated steel with bids due soon.

CANADA

... Munitions swell business in Canada; tool sales up.

TORONTO, June 14.—Announcement was made from London during the week to the effect that the British Government may place munitions and war materials contracts in Canada at an outlay of \$200,000,000. Already approximately \$100,000,000 in war contracts have been placed with Canadian firms and further orders of this nature will greatly add to plant operations in the Dominion. Considerable improvement is reported in machinery and machine tool sales for new plants and replacements. Domestic demand for steel and steel products is holding at a good level and while no large tonnage awards were reported for the week, spot buying is responsible for good movement of materials.

Demand for raw materials is advancing slowly but steadily in keeping with the upward swing to industrial activities. Merchant pig iron

sales for the week rose to close to 2500 tons against spot orders with further shipments of some 2000 tons against contract. Melters are showing more interest in the market and inquiries indicate that there will be larger booking for third quarter when producers open books toward the latter part of this month. Pig iron production is holding at its former high rate of 65 per cent of all Canadian capacity with six out of 10 stacks blowing. Imports of iron continue small, all from the United States.

Trading in iron and steel scrap is gaining in volume with the steel mills taking all the heavy melting steel offered by dealers. Some inquiry has appeared recently for steel turnings and a few car lot shipments have been made. Foundries are in the market for iron scrap and there is a good call for machinery cast and stove plate. Wrought scrap also is in demand. Local dealers still are awaiting a more active market in the United States, but a few shipments have been made across the border.

\$2,000,000 a Year Authorized for Educational War Orders

WASHINGTON.—The War Department would be authorized to spend \$2,000,000 a year for the next five years for the placing of educational orders with manufacturers under a bill just passed by Congress on Monday and sent to the White House.

Designed to familiarize manufacturing concerns with the Government's wartime requirements whereas their present information is necessarily limited to paper knowledge, the plan is expected to greatly advance this country's industrial preparedness for emergency.

"It takes time, often many months, to make tools, jigs, dies, fixtures, and other aids to manufacturing and to lay out the shop practice for the production of munitions and weapons of war," said the House Military Affairs Committee when it reported favorably on the bill. "The provision of the tools alone, which under this bill

would be the property of the War Department, would cut down the time, from the beginning of the emergency until it was possible for the factories to get into production in quantity, by at least five months on the average.

"We do not have sufficient reserves of war materials now. We must either provide them or provide some means of acquiring them rapidly after the beginning of the emergency."

In placing the educational orders the Department could waive the competitive bidding requirement and use its own discretion, but the committee said it is not the plan to permit the Department to purchase other supplies without regard to the bidding statute. All educational orders would be subject to Presidential approval.

A four-day study of iron and steel and other plants in the Pittsburgh district was begun Monday by 65 Army, Navy and Marine officers.

Fight Threatens to Disrupt the UAW

DETROIT.—Failure of a *coup d'etat* attempted last week by three officers of the United Auto Workers Union is likely to result in a call for a national UAW convention this summer. The president himself, Homer Martin, may seek the general rank-and-file session as an emergency measure to strengthen and define his position, or the call may come by petition from supporters of the "unity" group, which has gained new strength from a coalition with the three rebelling officers.

Suspension of Richard Frankenstein, vice-president, who until recently headed the Ford unionization drive, at least will be one outcome of the fracas which started when Frankenstein and two others, Wyndham Mortimer, vice-president, and George Addes, secretary-treasurer, sought to run away with the proceedings at an executive board meeting called ostensibly to consider a group insurance plan. Martin supporters considered the attempt merely an effort to oust Martin.

Back of the fight now raging within the union probably is the aspiration of Mortimer, a leader of the radical

group in the union, for the presidency. Frankenstein recently has indicated that he, too, might later run for the presidency. When the affair, characterized by Martin's friends as a civil war, broke into the open, it had already progressed to the point where it was necessary to seek the aid of John L. Lewis, who had shown preference to Wyndham Mortimer previously but was expected to lend support to peace-making overtures rather than see the present regime thrown out of official control.

....PIPE LINES....

Bureau of Reclamation, Denver, asks bids until July 1 for 40 102-in. dia. welded plate-steel conduit linings for outlet works at Grand Coulee Dam, Columbia Basin project, Wash., including pipe supports, pipe plugs, flange stud bolts and field-welding electrodes; also for 880 anchor bolts (Specifications 789).

San Joaquin Light & Power Corp., Fresno, Cal., has authorized immediate construction of welded steel pipe line from Merced to Atwater and Livingston, Cal., about 13½ miles, for natural gas transmission. Contract for pipe has been let to Crane Co., San Francisco and Chicago. Cost close to \$250,000.

Hammann Exploration Co., Gulf Building, Houston, Tex., plans welded steel pipe line for natural gas transmission to new natural gas-line plant in Hammann oil field, near Bay City, Tex.

Texas Co., Houston, Tex., has authorized construction by its subsidiary, Texas Pipe Line Co., same address, of 12-in. welded steel pipe line from Lake Barre and Caillou Island oil field at Houma, La., to main oil refinery

at Port Arthur, Tex., about 250 miles, for crude oil transmission, recently noted in these columns. New line will replace present barge transportation of crude oil through Inter-coastal Canal between points mentioned.

Office of District Quartermaster, CCC, Sparta, Wis., closes bids June 22 for 13,000 lin. ft. of ¾-in. welded black pipe (Circular 7601-132).

Metropolitan Utilities District, Eighteenth and Harney Streets, Omaha, Neb., plans extensions in pipe lines for gas transmission in District No. 840. Col. T. A. Liesen is secretary.

Cut Bank, Mont., plans steel pipe line for main water supply from point on Cut Bank River, new water course, to municipal limits, about 20 miles. Cost close to \$200,000.

United States Engineer Office, Philadelphia, closes bids June 17 for eight cast steel discharge pipe elbows, two cast steel outlet angle liners, two cast steel discharge Y's, one cast steel pipe sleeve, two cast steel suction side heads and other cast steel sections (Circular 450).

Spokane, Wash., opens bids June 16 on 12,500 ft. of 24-in. steel pipe.

Greater Vancouver Water District, Vancouver, B. C., opens bids July 7 on 9500 ft. of electric welded steel or concrete 60-in. pipe, 4500 ft. of 48-in., and 9500 ft. of 32-in.

....BUFFALO....

...Three more openhearth melting in Buffalo district.

BUFFALO, June 14.—A mild flurry of new business has increased open-hearth operations, with Bethlehem Steel Corp.'s Lackawanna plant operating nine as against seven last week, and Republic Steel Corp. operating two units, an increase of one from last week. Wickwire-Spencer Steel Co. production remains unchanged at one furnace.

Finished steel conditions are quiet with sheets showing weakness and current interest attaching to the new schedules for galvanized (24 gage) of 3.65c. Pittsburgh, less \$2 functional allowance and for 26 gage, 3.65c. less \$4 functional allowance and beyond that \$2 for carload lots.

Steel construction concerns are interested in the award yesterday to a Buffalo maker of 210 tons of structural and 100 tons of reinforcing steel for the new Buffalo State Cancer Hospital. An additional 110 tons of steel sheet piling has yet to be awarded.

Award of the steel for the new Wickwire-Spencer wire mill will be made probably this week. The fabricated structural involved is 1150 tons instead of 1000 as originally estimated and there is also 270 tons of steel roofdeck in the job.

Warehouse business is spotty, with structural showing some improvement because of more Government projects coming out.

.. PHILADELPHIA ..

*... District operating rate levels off at 22 per cent ...
Galvanized sheets selling for 3.65c. a lb., Pittsburgh
... General sales volume apparently stationary or possibly somewhat improved ... Pennsylvania Railroad to build 1000 cars and 20 locomotives.*

PHILADELPHIA, June 14.—Weekly sales volumes and weekly operating rates are now about balanced here, the latter being apparently fairly steady in the neighborhood of 22 per cent of potential capacity. Practically every seller reports bookings so far this month as averaging very near the May level, and some others even insist that there has been a slight improvement, such improvement being made up of very small orders of entirely a miscellaneous character traceable to no particular outlet.

The price situation for galvanized sheets, after several weeks of fussing around, appears to be steadying at 3.65c. a lb., Pittsburgh, although no major maker has made formal announcement of such action. This new price, if and when it is firmly established, will represent a \$3 decline from the second quarter quotation, but none the less would be firmer than some levels at which the material recently has been sold. All other steel prices are well established and seemingly very firm.

With Pennsylvania Railroad employees at Altoona in pretty bad shape due to the recession, the carrier has decided to construct 1000 gondola cars, eight special freight cars and 20 locomotives, all the work involving about 1,000,000 man-hours of employment. It takes considerable optimism to believe that this work will benefit steel mills much, as Pennsylvania has an exceptionally heavy inventory of steel. Likely some of this stock is of incorrect size and gage, and would entail too much scrap loss to adapt to the new designs, but that the bulk of the requirements will come from inventory is mostly taken for granted. At present Pennsylvania engineers, are making up their bill of materials, and, after matching these against the stock lists, will be in a position to talk business of some sort with various steel producers.

Pig iron shipments are fully equal to the average May volume, although

there is no indication that foundry melt is due for any improvement during the summer months. Consumer stocks are quite low, on the average, but there is certainly no general willingness to rebuild inventories at present price levels and with general business conditions as they are at the moment. The reported importation of 2900 tons of Norwegian iron into Baltimore at a price of \$6 a ton has resulted in considerable interest here, but investigation has disclosed a statistical error, the true importation

.. SAN FRANCISCO ..

... U.S. buying 11,000 tons of piling for flood control.

SAN FRANCISCO.—Proposals on 11,000 tons of sheet piling, 7721 tons of reinforcing bars, and approximately 100 tons of wire have been issued by the United States Engineer, Los Angeles. The materials will be used in flood control work at three different points near the city. Bids on the piling, called for on short notice, were opened June 10, the reinforcing bar bids were to be opened June 15, and the wire bids have been opened at different times. Contracts call for continuous delivery, starting almost immediately.

Bids on a bridge at Redding, Cal., the first of several in the Central Valley project, will be opened July 11. The structure, which will require approximately 6000 tons of shapes, is made necessary by relocation of Southern Pacific Railroad tracks around Shasta Dam.

With the exception of Bureau of Reclamation projects, which are in full swing at all Western points, reinforcing bar demand has slowed.

The new Los Angeles parcel-post

being 298 tons, and the price being far higher as would be expected for the exceptionally high grade iron involved. Scrap here continues to run counter to the softness in other areas. Prices are apparently quite firm, and dealers are free to admit that supplies are far from plentiful. That an upturn in steel operations would witness a volatile price situation is quite evident to those in the trade.

The construction business here continues to be rather listless, with little encouraging in prospect for the next six weeks. During the week, 225 tons of shapes went to Max Corchin, Philadelphia, for a Bryn Mawr apartment house; Bethlehem secured 560 tons for the Hahneman Medical College, and also 250 tons for a Salem, N. J., warehouse. The only major new work up for estimating is an American Viscose Co. building at Nitro, W. Va., involving 750 tons of shapes. The week's only bar award involved 2250 tons of re-rolled sections for the Washington printing building, awarded to Sweets Steel Co.

terminal, for which bids will be taken July 19, will require from 2000 to 5000 tons of shapes, and a large quantity of reinforcing bars.

RAILROAD BUYING

Board of Transportation, New York, is considering the purchase of 11 service cars.

Newfoundland Railway is contemplating the purchase of 50 flat cars.

Malahat Logging Co., Vancouver, British Columbia, is taking bids on one oil-burning locomotive.

Directors of the Pennsylvania Railroad have authorized construction of 1000 70-ton gondola cars, eight special type freight cars and 20 electric passenger locomotives, at an estimated cost of \$8,315,000. The special type freight cars will include six well-hole cars of 120 tons' capacity for shipments of unusual size and shape and two 200-ton flat cars for extraordinarily heavy duty. Freight cars and the chassis of the locomotives will be built at the Pennsylvania's Altoona shops, and the locomotives will be assembled at Altoona.

American Car & Foundry Motors Co. has received an order for seven 30-passenger motor coaches from Des Moines Railway Co., Des Moines, Iowa, and for one 36-passenger coach from Campus Travel, Inc., New York.

Baldwin Locomotive Works has shipped two Mountain type 4-8-2 narrow gage passenger locomotives to Ferrocarril del Norte, Seccion Segunda, Colombia, S. A.

RAILS AND TRACK SUPPLIES

Santa Fe has purchased 7000 tons of 131-lb. rails and 2500 tons of fastenings from Colorado Fuel & Iron Co. for its coast line division.

.....NEW YORK.....

... School construction program, involving expenditure of \$223,000,000, submitted to City Planning Commission for approval ... Galvanized sheet price of 3.65c. named ... Business no better.

NEW YORK, June 14.—Business is no better, nor are the immediate prospects improved. The steel trade has resigned itself to a dull summer.

There is hope of a pickup in business late in the summer. Some of the early impetus probably will come from the shipbuilding and construction industries and from Government expenditures. A local project of importance is the proposal that has been submitted to the City Planning Commission for approval covering the construction of 227 school buildings within the next six years at a total cost of \$223,000,000. These schools would take 103,000 tons of structural shapes. The Metropolitan Life Insurance Co. has awarded nearly 12,000 tons of steel for an office building to the American Bridge Co.

The announcement by some companies of 3.65c. a lb., Pittsburgh, as their price on galvanized sheets has followed two or three weeks of uncertainty, during which most mills have booked business at 3.60c., Pittsburgh. The new price is a formal reduction of \$3 a ton. No changes have been made in extras, nor has the functional discount to jobbers been discontinued, as was expected.

Plates and Sheets

Minor fluctuations from week to week make it difficult to point to other than a sidewise trend. The project in-

volving 30 barges for the Department of Sanitation is still in an indeterminate state and no action on the bids is expected in the near future. Bethlehem Shipbuilding Co. has been awarded the contract to recondition the Virginia and the Pennsylvania, two former Panama-Pacific liners recently taken over by the Maritime Commission.

The Pennsylvania Railroad is planning to buy 30 locomotives, in addition to building 1000 cars at its Altoona shops.

Sheet sales are drifting along at low levels. The new prices on galvanized sheets are not expected to stimulate business. One of the smaller independents had comparable prices out a month ago and the change in sales activity was negligible. Buying is purely on a hand-to-mouth basis.

Mohawk Iron & Steel Co., of Albany, was low bidder on 100,000 sheets, 24 gage (334 tons), hot rolled, pickled annealed license plate material for the State of New York. Shipment is to take place up to Sept. 30.

Steel Corp. Shipments Off 36,891 Tons in May

UNITED STATES STEEL CORP. subsidiaries in May shipped 465,081 tons of finished steel products compared with 501,972 tons

Their price delivered to Auburn prison was \$3.915 per 100 lb., with 1 per cent discount for cash on the base price. Youngstown Sheet & Tube Co. is supplying the material.

Pig Iron

The present low rate of melting operations continues to limit the demand for iron to occasional carlots for immediate delivery. Casting operations are averaging about 20 per cent of potential capacity and there is little in the picture to suggest that there will be any improvement in the next two months. Sales for the current month to date are slightly below the level of a comparable period in the preceding month, and shipments, which in the past eight months have been substantially in excess of sales, are following a similar trend, but at a faster pace.

Reinforcing Bars

Awards in the past week showed a slight gain over the preceding week, due chiefly to the awarding of the bar requirements of the General Foods building in Hoboken, N. J. This tonnage, estimated at 1300 tons, was placed with the Concrete Steel Co., and is the largest private tonnage to be placed in this district in several months. Pending tonnages total about 4000 tons, the bulk of which is accounted for by a sewer project in Brooklyn on which Luang Construction Corp., Brooklyn, is low bidder, and a highway in Queens.

in April, a drop of 36,891 tons, and with 1,304,039 tons in May, 1937, a decline of 838,958 tons. Shipments in the first five months of 1938 totaled 2,532,297 tons against 6,345,724 tons in the like period of 1937.

MONTHLY SHIPMENTS OF FINISHED STEEL PRODUCTS BY UNITED STATES STEEL CORP.—TONS

Month	1934		1935		1936		1937		1938	
	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity	Shipments	Per Cent of Capacity
January	331,777	19.8	534,055	31.9	721,414	44.8	1,149,918	75.4	518,322	33.7
February	385,500	25.9	583,137	39.2	676,315	45.3	1,133,724	82.5	474,723	35.5
March	588,209	35.2	668,056	41.5	783,552	50.5	1,414,399	92.7	572,199	37.2
April	643,009	41.5	591,728	36.7	979,907	63.2	1,343,644	91.0	501,972	33.7
May	745,063	44.5	598,915	35.8	984,097	63.4	1,304,039	85.5	465,081	30.2
June	985,337	61.2	578,108	36.7	886,065	57.1	1,268,550	85.8	.....	.....
July	369,938	23.9	547,794	34.0	950,851	61.3	1,186,752	77.9	.....	.....
August	378,023	22.6	624,497	37.3	923,703	59.6	1,107,858	72.6	.....	.....
September	370,306	23.9	614,933	39.7	961,803	62.0	1,047,962	71.1	.....	.....
October	343,962	20.6	686,741	41.1	1,007,417	62.6	792,310	52.0	.....	.....
November	366,119	22.7	681,820	42.3	882,643	59.2	587,241	39.7	.....	.....
December	418,630	27.0	661,515	42.7	1,067,365	68.8	489,070	32.1	.....	.....
Minus yearly adjustment	(—19,907)	...	(—23,750)	...	(—40,859)	...	(—77,113)	...	.....	...
Total for year	5,905,966	30.6	7,347,549	38.1	10,784,273	58.2	12,748,354	70.4	.....	...

*Annual capacity 18,114,000 gross tons, with monthly percentages based on actual number of weeks in each month.

...NON-FERROUS...

... Export copper demand tapers; domestic buying shows no improvement ... Corroders active in maintaining previous week's volume of lead buying ... Spelter sales lighter but scarcity of ore offerings keeps market firm.

NEW YORK, June 14.—The clouded political situation abroad and the low level of industrial activity in this country continued to militate against improvement in the non-ferrous markets. Copper buying for armament purposes is still the mainstay of the foreign copper market, but the conditions that engender this buying rob the market of the support that would normally

be received from buying movements of this size. Foreign demand has declined progressively in the past two days and prices were down to 8.60c. per lb., c.i.f., usual base ports, this morning. Domestic sales of the red metal, which total 7670 tons for the month through Saturday, are mostly routine intercompany transactions, at the steady price of 9c. per lb., Connecticut Valley, for electrolytic metal.

Independent copper consumers are showing no interest in the market, even to the extent of ignoring outside offerings at 8.875c.

Lead

The slight improvement in demand noted two weeks ago was extended into the past week, with the corroding trade particularly active. Buyers have been inclined to favor July positions, with the result that a substantial tonnage of June metal is yet to be bought. The present activity is undoubtedly due to the fact that consumers have been eating heavily into reserves for the past three months and these have reached the point where they must be replenished. Quotations are firm and unchanged at 4c. per lb., New York.

Zinc

Sales in the past week were 2776 tons, a drop of 1484 tons from the 4260-ton level of the previous week. Despite this decline, the week's sales were considerably in excess of the average week for the year to date. Shipments during the week were 2455 tons, as compared with 3006 in the preceding week, and undelivered contracts now stand at 24,527 tons. Quotations are unchanged at 4.39c. per lb., New York, with much of the market's present firmness due to the continued scarcity of ore offerings in the Tri-State field. Prices in London this morning were down slightly in an inactive market, spot metal being quoted at 2.75c. per lb.

Tin

Pricewise, the market was fairly steady in the past week, despite the lack of buying. This steadiness was derived chiefly from the recent cut in quotas to 45 per cent and the anticipation that another 10 per cent will probably be added to feed the buffer pool. Should this additional 10 per cent be added, the monthly marketable tonnage available will be about 8000 tons, or roughly 2000 tons below estimated consumption. Domestic prices moved in the limited range all week, with Straits metal today priced at 38.70c. per lb., New York, five points below the price of a week ago. On first call in London today, cash standards were quoted at £170, and three months metal at £170 15s.

Ajax Steel & Forge Co., 205 Adair Street, Detroit, has appointed the Machine & Tool Designing Co., 1011 Chestnut Street, Philadelphia, as its representative in eastern Pennsylvania, eastern New York, New Jersey, Delaware, Maryland and Washington, D. C. The company specializes in the design of special machinery, tools, jigs, fixture, punches and dies.

The Week's Prices. Cents Per Pound for Early Delivery

	June 8	June 9	June 10	June 11	June 13	June 14
Electrolytic copper, Conn.*	9.00	9.00	9.00	9.00	9.00	9.00
Lake copper, N. Y.	9.125	9.125	9.125	9.125	9.125	9.125
Straits tin, spot, New York	38.50	38.75	39.45		39.00	38.70
Zinc, East St. Louis	4.00	4.00	4.00	4.00	4.00	4.00
Zinc, New York	4.39	4.39	4.39	4.39	4.39	4.39
Lead, St. Louis	3.85	3.85	3.85	3.85	3.85	3.85
Lead, New York	4.00	4.00	4.00	4.00	4.00	4.00

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
Aluminum, virgin, 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 14.00c. a lb., prompt, f.o.b., New York.
Antimony, American, 11.75c. per lb., prompt shipment, New York.
Quicksilver, \$82.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5, 9.25c. a lb., less carload, delivered in Middle West
¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse	
Delivered Prices, Base per Lb.	
Tin, Straits pig	39.50c. to 40.50c.
Tin, bar	41.50c. to 42.50c.
Copper, Lake	10.00c. to 11.00c.
Copper, electrolytic	10.00c. to 11.00c.
Copper, castings	9.50c. to 9.75c.
*Copper sheets, hot-rolled	17.125c.
*High brass sheets	15.625c.
*Seamless brass tubes	18.375c.
*Seamless copper tubes	17.625c.
*Brass rods	11.625c.
Zinc, slabs	5.50c. to 6.50c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.50c.
Lead, American pig	5.00c. to 6.00c.
Lead, bar	5.75c. to 6.125c.
Lead, sheets, cut	7.25c.
Antimony, Asiatic	15.25c. to 16.25c.
Alum., virgin, 99 per cent plus	22.50c. to 24.00c.
Alum., No. 1 for remelting, 98 to 99 per cent	19.50c. to 21.00c.
Solder, ½ and ½	28.50c. to 30.50c.
Babbitt metal, commercial grade	19.00c. to 49.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 25 per cent allowed off for extras, except copper sheets and brass rods, on which allowance is 40 per cent.

From Cleveland Warehouse	
Delivered Prices per Lb.	
Tin, Straits pig	43.25c.

Tin, bar	45.25c.
Copper, Lake	10.00c. to 10.25c.
Copper, electrolytic	10.00c. to 10.25c.
Copper, castings	9.75c.
Zinc, slabs	7.00c. to 7.25c.
Lead, American pig	4.50c. to 4.75c.
Lead, bar	7.75c.
Antimony, Asiatic	17.75c. to 18.00c.
Babbitt metal, medium grade	19.00c.
Babbitt metal, high grade	47.25c.
Solder, ½ and ½	26.00c.

Old Metals Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	6.25c.	7.00c.
Copper, hvy. and wire	5.50c.	6.00c.
Copper, light and bottoms	4.875c.	5.125c.
Brass, heavy	3.25c.	3.75c.
Brass, light	2.375c.	3.125c.
Hvy. machine composition	5.00c.	6.50c.
No. 1 yel. brass turnings	3.75c.	4.75c.
No. 1 red brass or compos. turnings	4.50c.	5.00c.
Lead, heavy	3.25c.	3.625c.
Cast aluminum	5.00c.	6.25c.
Sheet aluminum	9.25c.	10.75c.
Zinc	1.625c.	2.875c.

IRON AND STEEL SCRAP

... Composite unchanged at \$11 ... Recent cartel sale has weakened buying prices at Boston.

JUNE 14.—For the moment another bottom has been reached in the domestic market, although time may prove it to be only a resting point as was the case a month ago. Prices on the principal grades are unchanged in all markets, but they are largely nominal in the almost complete absence of trading. THE IRON AGE composite remains at \$11. At Pittsburgh, the market is slightly stronger as brokers are paying \$10.75 to cover recent sales of No. 1 steel taken at that same figure, and one consumer is willing to pay \$11.

The recent sale of 375,000 tons to the European cartel is having a weakening effect on the export market. Buying prices at Boston are off 50c. to \$1 a ton. Already substantial shipments are leaving New York. Some of this material had been bought several months ago for Japanese accounts at much higher prices, to which demurrage charges have been added.

Pittsburgh

If anything, the market is slightly stronger this week, but no especial significance is attached to the change. One buyer who had been offering \$10.75 for No. 1 steel is now willing to purchase at \$11 a ton. The market is still thin and will continue to be extremely sensitive to changes, however slight. Meanwhile, most brokers are paying \$10.75 a ton or more on recent sales of No. 1 steel taken at \$10.75. For the time being, the bottom appears to have been reached.

Chicago

Railroad lists are practically non-existent, mill interest is nil, and broker-dealer transactions are infrequent, and unimportant for the most part. No price changes have been made this week, No. 1 remaining at \$10 to \$10.50.

Cleveland

Quotations are unchanged at Cleveland and Youngstown, as the long period of inactivity continues. What little scrap is being moved is going out of town.

Buffalo

The principal consumer in this area continues to offer \$10.50 for No. 1 heavy melting steel; \$8.50 for No. 2 heavy melting steel, \$9 for new hydraulic compressed sheets and \$7.50 for old bundles. So far dealers have responded to this offer with about 1000 tons of material. Outside of this activity, the market is very quiet and prices quoted are practically nominal.

St. Louis

No deals between the mills and dealers are pending. Prices for heavy melting steel here, however, have been sufficiently attractive to move scrap from Chicago territory. Offerings from the railroads are increasing. The Southern Railway has a list of 4000 tons, of which perhaps 500 tons could be moved here; the Gulf Coast Lines has a list of 1000 tons, and the Louisville & Nashville, 7000 tons, including 4000 tons of carwheels, that road's first offering of this item in eight months.

Cincinnati

Current old materials trading is light. Orders for small amounts trickle into the market, but these give no indication of trend. Prices are unchanged, since current business is reported at the present market. Dealers hold material close and very little distress scrap is reported.

Detroit

Scrap and steel production in the Detroit area continue at the low levels which have characterized recent weeks. Meanwhile prices showed no movement in any direction. Some bushelings were bought for an Ohio mill, but local buying factors have been shunning the market. Fisher Body factories this week offered a total of only about 50 carloads of bundles. Ordinarily this amount would be produced at each of the several plants.

New York

Shipments on the recent order for 375,000 tons from the European Scrap Cartel are going forward rapidly. Practically all old material that had been on barges anytime up to 80 or 90 days will have been transferred to vessels within another week, and exporters are feeling much happier over the situation. Some of this material might be termed distress scrap to the extent that it was bought originally for shipment to Japan several months ago when the buying price for No. 1 steel was around \$13 a ton, as compared with \$10 f.a.s. on the recent order from Europe. New material is coming out none too freely, due to the low ebb of industrial activity, but there has been no advance in buying prices and none is expected. A few carlot sales of heavy breakable cast to Harrisburg and Coatesville constitute about the only domestic business.

Boston

Booking of export orders, as reported last week, so far has created little enthusiasm in local scrap circles despite the fact part of the tonnage will be shipped from here to Italy. The lack of interest is ascribed in part to prices at which contracts were made. Local export prices are easier. Quotations on No. 2 steel now are generally \$7.50 to \$7.75 a

ton delivered dock, contrasted with \$8.50 a week ago, while offers for No. 1 steel are \$9 to \$9.50 a ton, mostly \$9. Holders of material in many cases are not willing to sell at these prices. Scrap for domestic consumption is virtually at a standstill and prices are nominal.

Philadelphia

The market here is somewhat mixed, but none the less continues to display a remarkably steady undertone. Whereas some brokers are having a difficult time picking up No. 1 steel to cover a small Claymont sale at \$11.50, other brokers are buying freely at \$11.50 or better to ship against several more recent Coatesville sales. Heavy breakable cast for one district consumer continues to show increasing strength, with brokers now offering \$13 a ton freely for desirable lots. Dealers are currently making up shipments for Port Richmond on old orders, to take care of an export boat due about June 20. Recent export sales of \$10 and \$8.50 for No. 1 and No. 2 leave this district cold, and one large dealer here reports one of the sellers already offering more than \$8.50 for No. 2 at Port Richmond for coverage on his share of the order. Even though June prices on the Pennsylvania Railroad scrap list were little different than those in May, the carrier has refused to sell June's list in the belief that higher prices will be realized if the scrap is held for a while.

....ST. LOUIS....

... Structural awards highlight otherwise dull market.

ST. LOUIS, June 14.—Public works projects in nearby states have been drawing the attention of interests here. St. Louis Structural Steel Co. was awarded 850 tons of structural shapes for the municipal auditorium at Little Rock, Ark. The State of Oklahoma has increased its project for which bids are due June 21 to seven highway bridges, requiring 4280 tons of structural shapes and 1265 tons of reinforcing bars. Bids are due June 18 for a retaining wall at Topeka, Kan., requiring 456 tons of steel sheet piling and 172 tons of reinforcing bars. A retaining wall at Little Rock, Ark., bids for which are due June 20, will require 1600 tons of steel sheet piling and 300 tons of reinforcing bars.

Mills report that buying of finished steel has dwindled to such materials as consumers find it compulsory to buy. However, there is a note of encouragement in the diversified character of the commitments, indicating that inventories are low and that any sort of a nominal pick up would be reflected in increased business for the mills.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$10.50 to \$11.00
Railroad hvy. mltng.	12.00 to 12.50
No. 2 hvy. mltng. steel	9.50 to 10.00
Scrap rails	13.00 to 13.50
Rails 3 ft. and under	15.00 to 15.50
Comp. steel	10.50 to 11.00
Hand bundled sheets	9.50 to 10.00
Hvy. steel axle turn	9.50 to 10.00
Machine shop turn	6.00 to 6.50
Short shov. turn	6.00 to 6.50
Mixed bor. & turn	5.75 to 6.25
Cast iron borings	5.75 to 6.25
Cast iron carwheels	12.50 to 13.00
Hvy. breakable cast	11.00 to 11.50
No. 1 cupola cast	13.00 to 13.50
RR. knuckles & cplrs.	14.00 to 14.50
Rail coil & leaf springs	14.00 to 14.50
Rolled steel wheels	14.00 to 14.50
Low phos. billet crops	14.50 to 15.00
Low phos. punchings	13.00 to 13.50
Low phos. plate	12.50 to 13.50

PHILADELPHIA

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$12.00
No. 2 hvy. mltng. steel	\$9.50 to 10.00
Hydraulic bund., new	11.50 to 12.00
Hydraulic bund., old	8.50 to 9.00
Steel rails for rolling	16.00 to 16.50
Cast iron carwheels	14.50 to 15.00
Hvy. breakable cast	13.00
No. 1 cast	14.50 to 15.00
Stove plate (steel wks.)	10.50 to 11.00
Railroad malleable	14.50 to 15.00
Machine shop turn	6.50
No. 1 blast furnace	6.00
Cast borings	6.00
Heavy axle turnings	8.50 to 9.00
No. 1 low phos. hvy.	16.00 to 16.50
Couplers & knuckles	15.00 to 15.50
Rolled steel wheels	15.00 to 15.50
Steel axles	20.00 to 20.50
Shafting	18.50 to 19.00
No. 1 RR. wrought	15.00 to 15.50
Spec. iron & steel pipe	12.00 to 12.50
No. 1 forge fire	9.50 to 10.00
Cast borings (chem.)	9.50 to 10.00

CHICAGO

Delivered to Chicago district consumers:

Per Gross Ton	
Hvy. mltng. steel	\$10.00 to \$10.50
Auto. hvy. mltng. steel alloy free	8.50 to 9.00
No. 2 auto. steel	8.00 to 8.50
Shoveling steel	10.00 to 10.50
Hydraul. comp. sheets	9.00 to 9.50
Drop forge flashings	7.75 to 8.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling, old	3.25 to 3.75
Rolled carwheels	12.50 to 13.00
Railroad tires, cut	14.00 to 14.50
Railroad leaf springs	13.50 to 14.00
Steel coup. & knuckles	12.50 to 13.00
Axle turnings	9.50 to 10.00
Coil springs	14.00 to 14.50
Axle turn. (elec.)	9.50 to 10.00
Low phos. punchings	13.00 to 13.50
Low phos. plates, 12 in. and under	12.00 to 12.50
Cast iron borings	3.50 to 4.00
Short shov. turn	5.00 to 5.50
Machine shop turn	3.50 to 4.00
Rerolling rails	13.25 to 13.75
Steel rails under 3 ft.	13.50 to 14.00
Steel rails under 2 ft.	14.00 to 14.50
Angle bars, steel	12.00 to 12.50
Cast iron carwheels	11.75 to 12.75
Railroad malleable	11.25 to 11.75
Agric. malleable	9.50 to 10.00
Per Net Ton	
Iron car axles	16.00 to 16.50
Steel car axles	14.50 to 15.00
No. 1 RR. wrought	7.50 to 8.00
No. 2 RR. wrought	8.75 to 9.25
Locomotive tires	13.75 to 14.25
Pipes and flues	7.25 to 7.75
No. 1 machinery cast	10.00 to 10.50
Clean auto. cast	9.00 to 9.50
No. 1 railroad cast	9.25 to 9.75
No. 1 agric. cast	9.00 to 9.50
Stove plate	6.50 to 7.00
Grate bars	6.50 to 7.00
Brake shoes	6.00 to 6.50

YOUNGSTOWN

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$10.50 to \$11.00
Hydraulic bundles	10.00 to 10.50
Machine shop turn	6.50 to 7.00

CLEVELAND

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$9.50 to \$10.00
No. 2 hvy. mltng. steel	8.50 to 9.00
Comp. sheet steel	9.00 to 9.50
Light bund. stampings	6.50 to 7.00
Drop forge flashings	8.00 to 8.50
Machine shop turn	4.75 to 5.25
Short shov. turn	5.25 to 5.75
No. 1 busheling	8.00 to 8.50
Steel axle turnings	7.50 to 8.00
Low phos. billet and bloom crops	14.00 to 14.50
Cast iron borings	4.75 to 5.25
Mixed bor. & turn	4.75 to 5.25
No. 2 busheling	4.75 to 5.25
No. 1 cast	12.50 to 13.00
Railroad grate bars	6.50 to 7.00
Stove plate	6.00 to 6.50
Rails under 3 ft.	14.00 to 14.50
Rails for rolling	12.00 to 12.50
Railroad malleable	11.50 to 12.00
Cast iron carwheels	12.00 to 12.50

BUFFALO

No. 1 hvy. mltng. steel	\$10.50 to \$11.00
No. 2 hvy. mltng. steel	8.50 to 9.00
Scrap rails	12.00 to 12.50
New hvy. b'ndled sheets	9.00 to 9.50
Old hydraul. bundles	7.50 to 8.00
Drop forge flashings	8.50 to 9.00
No. 1 busheling	8.50 to 9.00
Hvy. axle turnings	8.50 to 9.00
Machine shop turn	4.50 to 5.00
Knuckles & Couplers	14.00 to 14.50
Coil & leaf springs	14.00 to 14.50
Rolled steel wheels	14.00 to 14.50
Low phos. billet crops	15.00 to 15.50
Shov. turnings	6.00 to 6.50
Mixed bor. & turn	4.50 to 5.00
Cast iron borings	4.50 to 5.00
Steel car axles	14.00 to 14.50
No. 1 machinery cast	13.00 to 13.50
No. 1 cupola cast	12.00 to 12.50
Stove plate	10.50 to 11.00
Steel rails under 3 ft.	15.00 to 15.50
Cast iron carwheels	12.00 to 12.50
Railroad malleable	11.50 to 12.00
Chemical borings	7.50 to 8.00

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. melting	\$10.25 to \$10.75
No. 1 hvy. melting	10.25 to 10.75
No. 2 hvy. melting	9.75 to 10.00
No. 1 locomotive tires	11.50 to 12.00
Misc. stand. sec. rails	11.00 to 11.50
Railroad springs	13.00 to 13.50
Bundled sheets	5.50 to 6.00
No. 1 busheling	5.50 to 6.00
Cast bor. & turn	1.50 to 2.00
Machine shop turn	1.50 to 2.00
Heavy turnings	7.00 to 7.50
Rails for rolling	13.00 to 13.50
Steel car axles	15.50 to 16.00
Iron car axles	19.50 to 20.00
No. 1 RR. wrought	7.50 to 8.00
No. 2 RR. wrought	10.00 to 10.50
Steel rails under 3 ft.	13.00 to 13.50
Steel angle bars	11.00 to 11.50
Cast iron carwheels	11.50 to 12.00
No. 1 machinery cast	11.00 to 11.50
Railroad malleable	10.00 to 10.50
No. 1 railroad cast	10.00 to 10.50
Stove plate	6.50 to 7.00
Agricul. malleable	9.00 to 9.50
Grate bars	7.00 to 7.50
Brake shoes	7.00 to 7.50

CINCINNATI

Dealers' buying prices per gross ton at yards:

No. 1 hvy. mltng. steel	\$7.75 to \$8.25
No. 2 hvy. mltng. steel	5.75 to 6.25
Scrap rails for mltng.	12.50 to 13.00
Loose sheet clippings	3.25 to 3.75
Hydrau. b'ndled sheets	7.25 to 7.75
Cast iron borings	1.75 to 2.25
Machine shop turn	2.25 to 2.75
No. 1 busheling	6.00 to 6.50
No. 2 busheling	1.25 to 1.75
Rails for rolling	14.50 to 15.00
No. 1 locomotive tires	11.25 to 11.75
Short rails	15.00 to 15.50
Cast iron carwheels	9.75 to 10.25
No. 1 machinery cast	9.75 to 10.25
No. 1 railroad cast	8.25 to 8.75
Burnt cast	4.75 to 5.25
Stove plate	4.75 to 5.25
Agricul. malleable	9.00 to 9.50
Railroad malleable	11.00 to 11.50
Mixed hvy. cast	6.50 to 7.00

BIRMINGHAM

Per gross ton delivered to consumer:	
Hvy. melting steel	\$11.50 to \$12.00
Scrap steel rails	14.00 to 14.50
Short shov. turnings	7.50 to 8.10
Stove plate	9.00 to 10.00
Steel axles	15.00 to 16.00
Iron axles	15.00 to 16.00
No. 1 RR. wrought	10.00
Rails for rolling	15.00 to 16.00
No. 1 cast	14.00 to 16.50
Tramcar wheels	14.00 to 15.00

DETROIT

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	\$6.50 to \$7.00
No. 2 hvy. mltng. steel	5.50 to 6.00
Borings and turnings	3.00 to 3.50
Long turnings	2.75 to 3.25
Short shov. turnings	3.50 to 4.00
No. 1 machinery cast	11.50 to 12.00
Automotive cast	11.50 to 12.00
Hvy. breakable cast	9.00 to 9.50
Hydraul. comp. sheets	7.00 to 7.50
Stove plate	6.75 to 7.25
New factory bushel	6.00 to 6.50
Old No. 2 busheling	2.00 to 2.50
Sheet clippings	4.00 to 4.50
Flashings	5.50 to 6.00
Low phos. plate scrap	7.50 to 8.00

NEW YORK

Dealers' buying prices per gross ton on cars:	
No. 1 hvy. mltng. steel	\$7.50 to \$7.75
No. 2 hvy. mltng. steel	5.50 to 5.75
Hvy. breakable cast	8.50 to 9.00
No. 1 machinery cast	10.50 to 11.00
No. 2 cast	7.00 to 7.50
Stove plate	6.50 to 7.00
Steel car axles	20.00 to 20.50
Shafting	15.00 to 15.50
No. 1 RR. wrought	11.00 to 11.50
No. 1 wrought long	9.50 to 10.00
Spec. iron & steel pipe	8.50 to 9.00
Rails for rolling	16.00 to 16.50
Clean steel turnings*	2.50 to 3.00
Cast borings*	2.50 to 3.00
No. 1 blast furnace	2.50 to 3.00
Cast borings (chem.)	9.50 to 10.00
Unprepared yard scrap	4.50 to 5.00
Light iron	3.00 to 3.50
Per gross ton, delivered local foundries:	
No. 1 machn. cast	\$13.00 to \$14.00
No. 2 cast	10.50 to 11.00

*\$1.50 less for truck loads.

BOSTON

Dealers' buying prices per gross ton:	
No. 1 hvy. mltng. steel	\$10.75 to \$11.00
Scrap rails	10.75 to 11.00
No. 2 steel	9.75 to 10.00
Breakable cast	7.25 to 7.75
Machine shop turn	1.45
Mixed bor. & turn	1.25
Bun. skeleton long	3.85
Shafting	13.00
Cast bor. chemical	5.50
Per gross ton delivered consumers' yards:	
Textile cast	\$12.00 to \$12.50
No. 1 machine cast	12.00 to 12.50

PACIFIC COAST

Per gross ton delivered to consumer:	
No. 1 hvy. mltng. steel	\$11.65 to \$12.15
No. 2 hvy. mltng. steel	10.65 to 11.15

CANADA

Dealers' buying prices at their yards, per gross ton:

Toronto Montreal	
No. 1 hvy. mltng. steel	\$10.50 \$9.50
No. 2 hvy. mltng. steel	9.50 8.50
Mixed dealers steel	8.50 7.50
Scrap pipe	8.50 7.50
Steel turnings	7.50 7.00
Cast borings	8.50 7.50
Machinery cast	15.00 14.00
Dealers cast	13.00 12.00
Stove plate	11.00 10.50

EXPORT

Dealers' buying prices per gross ton:	
New York, truck lots, delivered, barges	
No. 1 hvy. mltng. steel	\$8.50 to \$9.50
No. 2 hvy. mltng. steel	7.00 to 8.00
No. 2 cast	7.00
Stove plate	6.00
Boston on cars at Army Base or Mystic Wharf	
No. 1 hvy. mltng. steel	\$9.00 to \$9.50
No. 2 hvy. mltng. steel	7.50 to 7.75
Rails (scrap)	9.00 to 9.50
Philadelphia, delivered alongside boats, Port Richmond	
No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs
Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

Per Gross Ton
Rolling \$37.00
Forging quality 43.00

Sheet Bars
Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton
Open-hearth or Bessemer \$37.00

Skelp
Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.
Grooved, universal and sheared 2.10c.

Wire Rods
(No. 5 to 9/32 in.)

Per Gross Ton
Pittsburgh or Cleveland \$47.00
Chicago, Youngstown or Anderson, Ind. 48.00
Worcester, Mass. 49.00
Birmingham 50.00
San Francisco 56.00
Galveston 53.00
Rods over 9/32 in. or 47/64 in., inclusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.
Pittsburgh 2.45c.
Chicago or Gary 2.50c.
Duluth 2.60c.
Detroit 2.60c.
Cleveland 2.50c.
Buffalo 2.55c.
Philadelphia 2.77c.
New York 2.81c.
Birmingham 2.60c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 3.00c.

RAIL STEEL BARS

(For merchant trade)

Pittsburgh 2.30c.
Cleveland, Chicago, Gary or Moline, Ill. 2.35c.
Buffalo 2.40c.
Birmingham 2.45c.
On cars dock Gulf ports 2.70c.
On cars dock Pacific ports 2.85c.

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh 2.45c.
Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 2.50c.
Detroit 2.60c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 2.95c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh 2.30c.
Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 2.35c.
On cars dock Gulf ports 2.70c.
On cars dock Pacific ports 2.80c.

IRON BARS

Chicago 2.40c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Base Per Lb.
Pittsburgh 2.90c.
Cleveland, Chicago and Gary 2.95c.
Buffalo 3.00c.
Detroit 2.95c.

* In quantities of 10,000 to 10,999 lb.

PLATES

Base Per Lb.
Pittsburgh 2.25c.
Chicago or Gary 2.30c.
Cleveland 2.45c.
Coatesville or Spar. Pt. 2.35c.
Philadelphia 2.445c.
New York 2.55c.
Birmingham 2.40c.
On cars dock Gulf ports 2.65c.
On cars dock Pacific ports 2.80c.
Wrought iron plates, P't'g. 3.80c.

FLOOR PLATES

Pittsburgh 3.50c.
Chicago 3.55c.
Coatesville 3.60c.
On cars dock Gulf ports 3.90c.
On cars dock Pacific ports 4.05c.

STRUCTURAL SHAPES

Base per Lb.
Pittsburgh 2.25c.
Chicago 2.30c.
Cleveland 2.45c.
Buffalo or Bethlehem 2.35c.
Philadelphia 2.465c.
New York 2.52c.
Birmingham (standard) 2.40c.
On cars dock Gulf ports 2.65c.
On cars dock Pacific ports 2.80c.

STEEL SHEET PILING

Base per Lb.
Pittsburgh 2.60c.
Chicago or Buffalo 2.70c.
On cars dock Gulf or Pacific Coast ports05c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton \$42.60
Angle bars, per 100 lb. 2.80

F.o.b. Basing Points

Light rails (from billets) per gross ton \$43.00
Light rails (from rail steel) per gross ton 42.00

Base per Lb.
Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts) 65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

NOTE: Following prices superseded by new base quotations of 2.30c., Pittsburgh, and 2.40c., Gary, on hot rolled sheets; 3.35c., Pittsburgh, and 3.45c., Gary, on cold rolled sheets, subject to new list of extras issued May 18. Until June 30 whichever set of base prices and extras yields lower net will apply.

Hot Rolled, 10 Gage

Base per Lb.
Pittsburgh 2.40c.
Gary 2.50c.
Detroit 2.60c.
Philadelphia 2.72c.
Granite City 2.60c.
Birmingham 2.55c.
On cars dock Pacific ports 2.95c.
Wrought iron, Pittsburgh 4.25c.

Hot Rolled Annealed, 24 Gage

Pittsburgh 3.15c.
Gary 3.25c.
Detroit 3.35c.
Philadelphia 3.47c.
Granite City 3.35c.
Birmingham 3.30c.
On cars dock Pacific ports 3.80c.
Wrought iron, Pittsburgh 5.15c.

Heavy Cold Rolled, 10 Gage*

Pittsburgh 3.00c.
Gary 3.10c.
Detroit 3.20c.
Philadelphia 3.32c.
Granite City 3.20c.
Birmingham 3.15c.
On cars dock Pacific ports 3.60c.

Light Cold Rolled, 20 Gage*

Pittsburgh 3.45c.
Gary 3.55c.
Detroit 3.65c.
Philadelphia 3.77c.
Granite City 3.65c.
Birmingham 3.60c.
On cars dock Pacific ports 4.00c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

Galvanized Sheets, 24 Gage

Pittsburgh 3.65c.
Gary 3.75c.
Philadelphia 3.97c.
Granite City 3.85c.
Birmingham 3.80c.
On cars dock Pacific ports 4.25c.
Wrought iron, Pittsburgh 6.10c.

Electrical Sheets (F.o.b. Pittsburgh)

Base per Lb.
Field grade 3.35c.
Armature 3.70c.
Electrical 4.20c.
Special Motor 5.10c.
Special Dynamo 5.80c.
Transformer 6.30c.
Transformer Special 7.30c.
Transformer Extra Special 7.80c.

Base gage changed from 23 to 24 gage. Gage extras are the same as those applying on hot-rolled, annealed sheets with few exceptions.
Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils

Long Ternes

No. 24, unassorted 8-lb. coating
f.o.b. Pittsburgh 4.10c.
F.o.b. Gary 4.20c.
F.o.b. cars dock Pacific ports 4.80c.
Vitreous Enameling Stock, 20 Gage
Pittsburgh 3.50c.
Gary 3.60c.
Granite City 3.70c.
On cars dock Pacific ports 4.10c.

TIN MILL PRODUCTS

NOTE: Base prices for third quarter unchanged, but will apply only to 29 gage and lighter; all other to be governed by sheet base and extras.

Black Plate, 28 Gage

Pittsburgh 3.30c.
Gary 3.40c.
Granite City 3.50c.
On cars dock Pacific ports, boxed 4.175c.

Tin Plate

Base per Box
Standard cokes, Pittsburgh \$5.35
Standard cokes, Gary 5.45
Standard cokes, Granite City 5.55

Special Coated Manufacturing Ternes

Base per Box
Pittsburgh \$4.65
Gary 4.75
Granite City 4.85

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C. \$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

HOT ROLLED STRIP

NOTE: Following prices superseded by new base prices of 2.30c., Pittsburgh, and 2.40c., Gary, subject to new list of extras issued May 18, which provide that base shall apply to strip 12 in. and under; all other to be governed by sheet base and extras. Until June 30 either old or new method may be used.

(Widths up to 24 in.)

Base per Lb.
Pittsburgh 2.40c.
Chicago 2.50c.
Detroit 2.60c.
Granite City 2.60c.
Birmingham 2.55c.

Cooperage Stock

Pittsburgh 2.50c.
Chicago 2.60c.

COLD ROLLED STRIP*

Base per Lb.
Pittsburgh 3.10c.
Cleveland 3.10c.
Chicago 3.39c.
Worcester 3.30c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh or Cleveland 3.25c.
Worcester 3.65c.

COLD ROLLED SPRING STEEL

Pittsburgh and Cleveland Worcester
Carbon 0.26-0.50% 3.10c. 3.30c.
Carbon .51-.75 4.45c. 4.65c.
Carbon .76-1.00 6.30c. 6.50c.
Carbon Over 1.00 8.50c. 8.70c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)

To Manufacturing Trade

	Per Lb.
Bright wire	2.90c.
Galvanized wire	2.95c.
Spring wire	3.50c.
Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.	

To the Trade

	Base per Keg
Standard wire nails	\$2.75
Smooth coated nails	2.75
Cut nails, carloads	3.60

	Base per 100 Lb.
Annealed fence wire	\$3.15
Galvanized fence wire	3.55
Polished staples	3.45
Galvanized staples	3.70
Barbed wire, galvanized	3.40
Twisted barbed wire	3.40
Woven wire fence, base column. 74	
Single loop bale ties, base col. 63	
Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$2 a ton over Pittsburgh, except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$3 a ton over Pittsburgh.	

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., are \$11 a ton over Pittsburgh; New Orleans, \$8; Mobile, Ala., \$7; Lake Charles, La., \$9 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of \$11 a ton over Pittsburgh are also quoted at Beaumont and Orange, Tex.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe
Base Discounts, f.o.b. Pittsburgh
District and Lorain, Ohio, Mills
F.o.b. Pittsburgh only on wrought iron pipe.

Steel		Butt Weld		Wrought Iron	
In.	Black Galv.	In.	Black Galv.	In.	Black Galv.
1/4	52	31	1/4 & 3/8	13	35
1/2	55	38 1/2	1/2	20	1 1/2
3/4	59 1/2	49	3/4	26	8
1	62 1/2	53	1 & 1 1/4	30	14
1 1/4	64 1/2	55 1/2	1 1/2	34	16 1/2
2	57	47 1/2	2	33 1/2	16
2 1/2	3.60	50 1/2	2 1/2 to 3 1/2	27 1/2	12 1/2
3 1/2	6.62	52 1/2	4	29 1/2	16
7	8.61	50 1/2	4 1/2 to 8.28 1/2	15	
9 & 10	60 1/2	50	9 to 12	24 1/2	10
11 & 12	59 1/2	49			
Butt Weld, extra strong, plain ends		strong, plain ends		strong, plain ends	
1/4	50 1/2	36 1/2	1/4 & 3/8	14	48
1/2	52 1/2	40 1/2	1/2	21	4
3/4	57 1/2	48 1/2	3/4	27	10
1	61 1/2	52 1/2	1	2.34	17 1/2
1 1/4	63	55			
Lap Weld, extra strong, plain ends		strong, plain ends		strong, plain ends	
2	55	46 1/2	2	29 1/2	13 1/2
2 1/2	3.59	50 1/2	2 1/2 to 4	35	20 1/2
3 1/2	6.62 1/2	54	4 1/2 to 6	33 1/2	19
7 & 8	61 1/2	54	7 & 8	34 1/2	19 1/2
9 & 10	60 1/2	50	9 to 12	28	15 1/2
11 & 12	59 1/2	49			

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/4 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes
(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Seamless	Lap Weld
	Cold Drawn	Hot Rolled
1 in. o.d. 13 B.W.G.	\$ 9.46	\$ 8.41
1 1/4 in. o.d. 13 B.W.G.	11.21	9.96
1 1/2 in. o.d. 13 B.W.G.	12.38	11.00
1 3/4 in. o.d. 13 B.W.G.	14.09	12.51
2 in. o.d. 13 B.W.G.	15.78	14.02
2 1/4 in. o.d. 13 B.W.G.	17.60	15.63
2 1/2 in. o.d. 12 B.W.G.	19.37	17.21
2 3/4 in. o.d. 12 B.W.G.	21.92	18.95
3 in. o.d. 12 B.W.G.	22.49	19.98
3 1/2 in. o.d. 12 B.W.G.	23.60	20.97
3 3/4 in. o.d. 11 B.W.G.	29.79	26.47
4 in. o.d. 10 B.W.G.	36.96	32.83
4 1/4 in. o.d. 10 B.W.G.	45.19	40.15
5 in. o.d. 9 B.W.G.	56.71	50.38
6 in. o.d. 7 B.W.G.	87.07	77.35
Extras for less carload quantities:		
40,000 lb. or ft. or over	Base	
30,000 lb. or ft. to 39,999 lb. or ft.	5%	
20,000 lb. or ft. to 29,999 lb. or ft.	10%	
10,000 lb. or ft. to 19,999 lb. or ft.	20%	
5,000 lb. or ft. to 9,999 lb. or ft.	30%	
2,000 lb. or ft. to 4,999 lb. or ft.	45%	
Under 2,000 lb. or ft.	65%	

CAST IRON WATER PIPE

	Per Net Ton
*6-in. and larger, del'd Chicago	\$55.00
*6-in. and larger, del'd New York	53.00
*6-in. and larger, Birmingham	47.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	56.00
F.o.b. dock, Seattle	56.00
4-in. f.o.b. dock, San Francisco or Los Angeles	59.00
F.o.b. dock, Seattle	56.00

Class "A" and gas pipe, \$3 extra
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$46, Birmingham, and \$54 delivered Chicago and 4-in. pipe, \$49, Birmingham, and \$58 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
Machine and carriage bolts:	
1/2 in. & 6 in. and smaller	.65 and 5*
Larger and longer up to	
1 in. ....	.60 and 10*
1 1/4 in. and larger	.60 and 5*
Lag bolts	.60 and 10*
Flow bolts, Nos. 1, 2, 3	
and 7	.65 and 5
Hot pressed nuts, and c.p.c. and t nuts, square or hex. blank or tapped:	
1/2 in. and smaller	.65
9/16 in. to 1 in. inclusive	.60 and 5
1 1/4 in. and larger	.60

* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon units, U.S.S. and S.A.E.

1/2 in. and smaller	.60 and 10
9/16 in. to 1 in. inclusive	.60 and 5
1 1/4 in. and larger	.60
Stove bolts in packages, nuts attached	70
Stove bolts in packages, with nuts separate	70 and 10
Stove bolts in bulk	80

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland	\$3.60
F.o.b. Chicago or Birmingham	3.70

Small Rivets

(7/16-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	.65 and 5
F.o.b. Cleveland	.65 and 5
F.o.b. Chicago and Birmingham	.65 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws, 1 in. dia. and smaller	.50 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller	75
Milled headless set screws, cut thread 3/4 in. and smaller	75
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	.70 and 5
Upset set screws, cup and oval points	.80 and 5
Milled studs	.65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs
F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Base price, \$60 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.	
Open-hearth grade, base	3.00c.
Delivered, Detroit	3.15c.
S.A.E.	
Series	Alloy
Numbers	Differential
	per 100 Lb.
200 (1/2% Nickel)	\$0.35
2100 (1 1/4% Nickel)	0.75
2300 (3/4% Nickel)	1.55

2500 (5% nickel)	\$2.25
3100 Nickel-chromium	0.70
3200 Nickel-chromium	1.35
3300 Nickel-chromium	3.30
3400 Nickel-chromium	2.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum)	0.55
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum)	0.75
4600 Nickel-molybdenum (0.20 to 0.30 Mo. 1.50 to 2.00 Ni)	1.10
5100 Chrome steel (0.60-0.90 Cr.)	0.35
5100 Chrome steel (0.80-1.10 Cr.)	0.45
5100 Chromium spring steel	0.15
6100 Chromium-vanadium bar	1.20
6100 Chromium-vanadium spring steel	0.85
Chromium-nickel-vanadium	1.50
Carbon-vanadium	0.35

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.60c. base per lb. Delivered Detroit, 3.75c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

Chrome-Nickel		No. 304	No. 302
Forging billets	21.25c.	20.40c.	
Bars	25c.	24c.	
Plates	29c.	27c.	
Structural shapes	25c.	24c.	
Sheets	36c.	34c.	
Hot-rolled strip	23.50c.	21.50c.	
Cold-rolled strip	30c.	28c.	
Drawn wire	25c.	24c.	
Straight Chrome			
No.	No.	No.	No.
410	430	442	446
Bars	18.50c.	19c.	22.50c.
Plates	21.50c.	22c.	25.50c.
Sheets	26.50c.	29c.	32.50c.
Hot strip 17c.	17.50c.	23c.	28c.
Cold stp. 22c.	22.50c.	28.50c.	36.50c.

TOOL STEEL

High speed	67c.
High-carbon-chrome	43c.
Oil-hardening	24c.
Special	22c.
Extra	13c.
Regular	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

British and Continental

BRITISH

Per Gross Ton
f.o.b. United Kingdom Ports

Ferromanganese, export	£20 Nominal
Tin plate, per base box	20s. 3d. to 21s. 6d.
Steel bars, open hearth	£11
Beams, open-hearth	£10 12s. 6d.
Channels, open-hearth	£10 17s. 6d.
Angles, open-hearth	£10 12s. 6d.
Black sheets, No. 24 gage	£13
Galvanized sheets, No. 24 gage	£16 15s.

CONTINENTAL

Per Gross Ton, Gold £.
f.o.b. Continental Ports

Billets, Thomas	Nominal
Wire rods, No. 5 B.W.G.	£5 10s.
Steel bars, merchant	£5 5s.
Sheet bars	Nominal
Plate 1/4 in. and up	£6 7s.
Plate 3/16 in. and 5 mm.	£6 13s.
Sheet, 1/4 in.	£6 9s. 6d.
Beams, Thomas	£4 18s.
Angles (Basic)	£4 18s.
Hoops and strip, base	£5 15s.

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	25.00
Delivered Brooklyn	27.50
Delivered Newark or Jersey City	26.53
Delivered Philadelphia	25.84
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo, Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	24.00
Delivered Cincinnati	24.44
F.o.b. Duluth	24.50
F.o.b. Provo, Utah	22.00
Delivered, San Francisco, Los Angeles or Seattle	26.95
F.o.b. Birmingham*	20.38

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

F.o.b. Everett, Mass.	\$25.25
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	24.50
F.o.b. Buffalo	23.00
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	23.50
Delivered Cincinnati	24.61
Delivered Canton, Ohio	24.89
Delivered Mansfield, Ohio	25.44
F.o.b. Birmingham	19.00

Bessemer

F.o.b. Everett, Mass.	\$26.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	26.00
Delivered Boston Switching District	26.50
Delivered Newark or Jersey City	27.53
Delivered Philadelphia	26.76
F.o.b. Buffalo and Erie, Pa., and Duluth	25.00
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago.	24.50
F.o.b. Birmingham	25.00
Delivered Cincinnati	25.61
Delivered Canton, Ohio	25.39
Delivered Mansfield, Ohio	26.44

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$28.50
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Gray Forge

Valley or Pittsburgh furnace.	\$23.50
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Charcoal

Lake Superior furnace	\$27.00
Delivered Chicago	30.34

Canadian Pig Iron

Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.	\$26.50
No. 2 fdy., sil. 1.75 to 2.25.	25.50
Malleable	26.00
Basic	25.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75.	\$27.50
No. 2 fdy., sil. 1.75 to 2.25.	27.00
Malleable	27.50
Basic	27.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload).	\$102.50

Spiegeleisen

Per Gross Ton Furnace

Domestic 19 to 21%	\$33.00
F.o.b. New Orleans	33.00

Electric Ferrosilicon

Per Gross Ton Delivered; Lump Size

50% (carload lots, bulk)	\$69.50*
50% (ton lots in 50 gal. bbl.) ...	80.50*
75% (carload lots, bulk)	126.00*
75% (ton lots in 50 gal. bbl.) ...	139.00*

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio

Per Gross Ton

10.00 to 10.50%	\$33.50
For each additional 0.50% silicon up to 17%, 50c. per ton is added.	
Manganese 2 to 3%, \$1 per ton additional.	
For each unit of manganese over 3%, \$1 per ton additional. Phosphorus 0.75% or over, \$1 per ton additional.	
Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	

Silvery Iron

Per Gross Ton

F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$27.50
For each additional 0.5% silicon up to 17%, 50c. a ton is added.	
The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.	
Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.	

Ferrocrome

Per lb. Contained Cr., Delivered Carlots, Lump Size, on Contract	
4 to 6% carbon	10.50c.*
2% carbon	16.50c.*
1% carbon	17.50c.*
0.10% carbon	19.50c.*
0.06% carbon	20.00c.*

Silico-manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

3% carbon	\$101.50*
2.50% carbon	106.50*
2% carbon	111.50*
1% carbon	121.50*

Other Ferroalloys

Ferrotungsten, per lb. contained W del., carloads, nominally	\$2.00
Ferrotungsten, lots of 500 lbs. nominally	2.05
Ferrotungsten, smaller lots. nominally	2.10
Ferrovandium, contract, per lb. contained V., delivered	\$2.70 to \$2.90†
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., tons lots.	\$2.25†
Ferrocantitanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocantitanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	\$58.50
Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville	\$75.00
Ferromolybdenum, per lb. Mo. f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo. f.o.b. furnace	80c.

*Spot prices are \$5 per ton higher
†Spot prices are 10c. per lb. of contained element higher

ORES

Lake Superior Ores

Delivered Lower Lake Ports

Old range, Bessemer, 51.50%	\$5.25
Old range, non-Bessemer, 51.50% ...	5.10
Mesabi, Bessemer, 51.50%	5.10
Mesabi, non-Bessemer, 51.50% ...	4.95
High phosphorus, 51.50%	4.85

Foreign Ore

C.i.f. Philadelphia or Baltimore

Per Unit

Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal.	17.00c.
Iron, low phos., Swedish, average, 63 1/4% iron. Nominally 17 to 18c.	
Iron, basic or foundry, Swedish, aver. 65% iron. Nominally 15c.	
Iron, basic or foundry, Russian, aver. 65% iron.	Nominal
Man., Caucasian, washed 52%	40c.
Man., African, Indian, 44-48%	40c.
Man., African, Indian, 49-51%	Nominally 38c.
Man., Brazilian, 46 to 48 1/2%	Nominally 38c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered	\$17.00
Tungsten, domestic, scheelite delivered	\$16.00 to \$19.00
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade)	\$18.00
Rhodesian, 45%	22.00
Rhodesian, 48%	25.50
Turkish, 48-49%	25.00 to \$26.00
Turkish, 45-46%	23.50 to 24.00
Turkish, 44%	19.00 to 19.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton: 50%	\$25.50 to \$26.50
48-49%	25.50 to 26.00

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$18.00
No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines.	\$18.00 to 19.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid.	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines.	31.50

FUEL OIL

Per Gal

F.o.b. Bayonne or Baltimore, No. 3 distillate	4.75c.
F.o.b. Bayonne or Baltimore, No. 4 industrial	4.75c.
Del'd Ch'go, No. 3 industrial.	4.15c.
Del'd Ch'go, No. 5 industrial.	4.00c.
Del'd Cleve'd, No. 3 distillate.	5.50c.
Del'd Cleve'd, No. 4 industrial.	5.25c.
Del'd Cleve'd, No. 5 industrial.	3.25c.

COKE

Per Net Ton

Furnace, f.o.b. Connells-ville, Prompt	\$3.75
Foundry, f.o.b. Connells-ville, Prompt	\$4.75 to 5.50
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England.	12.50
Foundry, by-product, del'd Newark or Jersey City	10.88 to 11.40
Foundry, by-product, Philadelphia	10.95
Foundry, by-product, delivered Cleveland ...	11.05
Foundry, by-product, delivered Cincinnati ...	10.50
Foundry, Birmingham ...	7.50
Foundry, by-product, del'd St. Louis industrial district	11.00 to 11.50
Foundry, from Birmingham, f.o.b. cars dock, Pacific ports	14.75

FABRICATED STEEL

... Lettings advance to 22,500 tons from 18,750 tons last week ... New projects higher at 20,900 tons ... Plate awards only 660 tons.

NORTH ATLANTIC STATES

AWARDS

- 11,700 Tons, New York, Metropolitan Life Insurance Co. building, to American Bridge Co., Pittsburgh.
- 1000 Tons, Everett, Mass., Boston Elevated Railway machine shop superstructure, to Bethlehem Steel Co., Bethlehem, Pa.
- 600 Tons, Philadelphia, medical building, Hahnemann medical college and hospital, to Bethlehem Steel Co., Bethlehem, Pa.
- 355 Tons, New York, Westinghouse building at World's Fair, to American Bridge Co., Pittsburgh.
- 300 Tons, New York, administration building at North Beach Airport, to Bethlehem Steel Co., Bethlehem, Pa.
- 275 Tons, Bryn Mawr, Pa., apartment building, to Max Corchin, Inc., Philadelphia.
- 260 Tons, Bellevue, Pa., school building, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 210 Tons, Buffalo, State cancer hospital, to Bethlehem Steel Co.
- 165 Tons, New York, alterations to B. Altman department store, Post & McCord, New York, erectors.
- 150 Tons, Forest Hills, N. Y., Roman Catholic Church, to Lehigh Structural Steel Co., Allentown, Pa.
- 140 Tons, Oil City, Pa., bridge, to Pittsburgh Des Moines Steel Co., Pittsburgh.
- 130 Tons, Peru, N. Y., grade and high school, to Vermont Structural Steel Co., Burlington, Vt.
- 105 Tons, New York, RCA building at World's Fair, to Lehigh Structural Steel Co., Allentown, Pa.

SOUTH AND SOUTHWEST

- 1195 Tons, Guntersville, Ala., power house for TVA, to Bethlehem Steel Co., Bethlehem, Pa.
- 210 Tons, Mills and San Saba Counties, Tex., truss spans, to Pittsburgh-Des Moines Steel Co., Pittsburgh.
- 186 Tons, Union County, N. M., bridge, to an unnamed fabricator.
- 160 Tons, State of Mississippi, grader blades for State Highway Department, to Columbus Iron Works Co., Columbus, Ga.
- 100 Tons, Lincoln County, Miss., bridge, to Pidgeon-Thomas Iron Works, Memphis, Tenn.

CENTRAL STATES

- 850 Tons, Little Rock, Ark., municipal auditorium, to St. Louis Structural Steel Co., East St. Louis, Ill.

- 504 Tons, Indianapolis, addition to Link-Belt Co. plant, to Insley Mfg. Corp., Indianapolis.

- 460 Tons, Columbus, Ohio, Olentangy apartment buildings, L. L. LeVeque Co., to Columbus Steel Industries, Inc., Columbus, Ohio.

- 400 Tons, Winslow, Neb., bridge, to Omaha Steel Works, Omaha, Neb.

- 290 Tons, Crawford County, Ind., bridge, to Midland Structural Steel Co., Cicero, Ill.

- 260 Tons, Evansville, Ind., art school, to International Steel Co., Evansville.

- 260 Tons, Columbus, Ohio, Powell-Merkle building, to American Bridge Co., Pittsburgh.

- 200 Tons, Waterloo, Wis., State bridge, to American Bridge Co., Pittsburgh.

- 188 Tons, Coshocton County, Ohio, State highway bridge, to Burger Iron Works, Akron, Ohio.

- 185 Tons, States of Missouri and Kansas, beam spans for Missouri Pacific Railroad, to American Bridge Co., Pittsburgh.

- 172 Tons, Springfield, Ill., grade crossing, to Gage Structural Steel Co., Chicago.

- 167 Tons, Sorento, Ill., bridge, to Fort Pitt Bridge Works Co., Pittsburgh.

- 165 Tons, Columbus, Ohio, Junior State Fair building, to Bethlehem Steel Co., Bethlehem, Pa.

- 130 Tons, Calumet, Mich., engine house and sheave stands, Calumet & Hecla Copper Co., to American Bridge Co., Pittsburgh.

- 120 Tons, Spencer County, Ind., bridge, to Midland Structural Steel Co., Cicero, Ill.

- 100 Tons, Lincoln, Ill., bridge, to Continental Bridge Co., Chicago.

- 100 Tons, Ottumwa, Iowa, addition to hog killing building, to Ottumwa Bridge & Construction Co., Ottumwa.

WESTERN STATES

- 425 Tons, Fort Peck, Mont., stop logs and lifting beams (Invitation 425-38-3), to Hansell-Elcock Co., Chicago.

- 170 Tons, Shelby, Mont., State bridge, to American Bridge Co.

- 100 Tons, San Francisco, State products terminal, to Columbia Steel Co., San Francisco, through Herrick Iron Works, Oakland, Cal.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

- 3400 Tons, New York, North Beach Airport hangars and other buildings.

- 2500 Tons, Queens, N. Y., Cross Bay Parkway; bids until June 21.

- 1500 Tons, New York, ventilation building, Queens-Midtown Tunnel; bids until June 21 by Tunnel Authority.

- 750 Tons, New York, World's Fair building for Great Britain.

- 320 Tons, Washington, building, Scottish Rite Temple.

- 250 Tons, New York, building addition, Shire Realty Corp.

- 200 Tons, Cambridge, Mass., Webster School.

- 125 Tons, Stowe, Vt., State beam spans.

- 125 Tons, Annapolis, Md., museum for Naval Academy, U. S. Government.

- 125 Tons, Jersey City, Clerk Street bridge.

- 100 Tons, Portland, Me., International Harvester Co. garage.

- 100 Tons, Boston, wool warehouse.

- 100 Tons, Stowe, Vt., State bridge.

THE SOUTH

- 4280 Tons, State of Oklahoma, seven highway bridges, increase over previous report; bids due June 21.

- 1000 Tons, Nitro, W. Va., addition to American Viscose Co. plant.

- 400 Tons, Chickamauga Dam, Ala., bridges for TVA.

- 350 Tons, Mill Creek, W. Va., dimension mills, Kenwood Corp.

- 225 Tons, Daily, W. Va., Tiger Valley resettlement project.

- 215 Tons, New Orleans, bridge.

- 200 Tons, State of Kentucky, beam spans, for Department of Agriculture.

- 135 Tons, Water Valley, Ky., State beam spans.

CENTRAL STATES

- 375 Tons, Indianapolis, Ind., bridge.

- 300 Tons, State of Wisconsin, eight highway bridges; bids June 21.

- 285 Tons, Dayton, Ohio, buildings for Veterans' Administration; bids about June 23.

- 160 Tons, Painesville, Ohio, addition, municipal power plant.

- 140 Tons, Oshkosh, Wis., Sacred Heart Church building.

- 130 Tons, Kansas City, Missouri Pacific coal-ing station; bids in.

- 125 Tons, Ogallala, Neb., Kingsley-Keystone Dam bridges; bids July 5.

WESTERN STATES

- 2000-5000 Tons, Los Angeles, parcel post building; bids July 19.

- 304 Tons, Delta, Colo., highway work (Project 409-B); bids June 20.

295 Tons, Cathlamet, Wash., approach to Puget Island bridge; bids June 21.

285 Tons, Culver City, Cal., process stage.

220 Tons, Skyhomish, Wash., Skyhomish River bridge; bids June 21.

156 Tons, Clallam County, Wash., Calawah River bridge; bids June 21.

FABRICATED PLATES

AWARDS

238 Tons, Marietta, Ohio, two dumping scows for U. S. Engineers, Huntington, W. Va., to Nashville Bridge Co., Nashville, Tenn.

110 Tons, Delhi, Ohio, 24-in. discharge pipe for U. S. Engineers, to American Rolling Mill Co., Middletown, Ohio.

105 Tons, Marcus Hook, Pa., tanks, to Norwalk Tank Co., South Norwalk, Conn.

102 Tons, Bridgeport, Conn., water tank, to Norwalk Tank Co., South Norwalk, Conn.

100 Tons, Bogota, Colombia, S. A., oil tanks, to Norwalk Tank Co., South Norwalk, Conn.

NEW PROJECTS

1000 Tons, Grand Coulee Dam, Wash., 40 welded steel conduit linings; bids July 1.

310 Tons, Akron, Ohio, third and last stand-pipe for city; bids June 28.

SHEET PILING

NEW PROJECTS

11000 Tons, Los Angeles and vicinity, flood control work by United States Engineer; bids opened.

1600 Tons, Little Rock, Ark., retaining wall; bids due June 20.

700 Tons, piling for Fairport, Ohio, Great Lakes Dredge & Dock Co., low bidder.

500 Tons, Everett, Wash., dam; Mason Construction Co., Vancouver, B. C., general contractor.

410 Tons, Hickman Field, T. H., H-piling at repair hangars; bids June 30.

456 Tons, Topeka, Kan., retaining wall; bids due June 18.

REINFORCING STEEL

*... Awards of 5025 tons;
20,700 tons in new projects.*

AWARDS

1300 Tons, Hoboken, N. J., General Foods building, to Concrete Steel Co., New York.

756 Tons, Imola, Cal., state hospital buildings, to Soule Steel Co., San Francisco.

441 Tons, Pullman, Wash., bridges, to Bethlehem Steel Co., Seattle.

400 Tons, Caldwell, Idaho, Boise project (Invitation 21080-A), to Colorado Fuel & Iron Co., Denver.

275 Tons, Waterbury, Conn., mesh, two highway projects, to Truscon Steel Co., Youngstown.

235 Tons, Cleveland, land piers for Main Street bridge, to Carnegie-Illinois Steel Corp., through Republic Structural Iron Works, Cleveland.

200 Tons, Westport, Conn., mesh, highway project, to American Steel & Wire Co., Cleveland.

200 Tons, Auburn, Me., State road, to Bancroft & Martin Rolling Mill Co., Portland, Me.

200 Tons, Parco, Wyo., Kendrick project (Invitation 22348-A), to Colorado Fuel & Iron Co., Denver.

189 Tons, Eldridge, Cal., detention cottages, to Soule Steel Co., San Francisco.

168 Tons, Rutledge, Tex., Colorado River project (Invitation A-46579-A), to Tennessee Coal, Iron & Railroad Co., Birmingham.

133 Tons, Charleston, Utah, Provo River project (Invitation 27518-A), to Republic Steel Corp., Cleveland.

125 Tons, Laughlinton, Pa., Scafe residence, to Jones & Laughlin Steel Corp., Pittsburgh.

100 Tons, Stanislaus County, Cal., highway work and bridges, to Soule Steel Co., San Francisco.

100 Tons, Steuben County, N. Y., mesh, highway project, to Wickwire Spencer Steel Co., New York.

100 Tons, Portland, Me., State bridge, to Bancroft & Martin Rolling Mill Co., Portland.

100 Tons, Buffalo State cancer hospital, to Bethlehem Steel Co., Bethlehem, Pa.

NEW REINFORCING BAR PROJECTS

7721 Tons, Los Angeles, flood control projects by United States Engineer (Proposal 595); bids opened.

4000 Tons, Grand Coulee Dam, Washington; bids June 22.

1500 Tons, Brooklyn, sewer, Avenue T and Flatbush Avenue, Luang Construction Corp., Brooklyn, low bidder.

1500 Tons, Queens, N. Y., Cross Bay Parkway; bids close June 21.

1265 Tons, State of Oklahoma, seven highway bridges; bids due June 21.

1000 Tons, Washington, Printing Office Annex; McCloskey & Co., Philadelphia, low bidder.

865 Tons, Grand Rapids, Mich., waterworks.

400 Tons, Dayton, Ohio, Veterans' Old Soldiers Home.

300 Tons, Little Rock, Ark., retaining wall; bids due June 20.

280 Tons, Lake County, Ill., paving—route 21.

250 Tons, State of Iowa, highway work.

250 Tons, Minneapolis, river bank improvement.

202 Tons, Odair, Wash., Grand Coulee project (Invitation A-38080-A); bids opened.

190 Tons, Washington, automobile parking ramp.

188 Tons, Corona, Cal., railroad and highway relocation; bids June 21.

172 Tons, Topeka, Kan., retaining wall; bids due June 18.

163 Tons, Coram, Cal., warehouse, Central Valley project (Invitation B-47131-A); bids June 16.

133 Tons, Weehawken, N. J., contract MHT-28, Lincoln Tunnel approach; bids until July 6 by Port of New York Authority.

120 Tons, Chicago, Calumet sewer, sanitary district.

100 Tons, Racine, Wis., Wisconsin highway bridge.

100 Tons, State of Montana, Bureau of Public Roads.

...BOSTON...

... June pig iron sales running ahead of May.

BOSTON, June 14.—Buying of pig iron in round tonnages did not develop the past week, bookings being confined to car lots and there were few of them. However, sentiment among foundrymen is as good as it was a week ago, and they profess to see good casting orders ahead. Despite the current lull, sales the first half of June are well ahead of those for the first half of May.

The cast iron pipe market is fairly active, with competition between domestic foundries, French interests, and composition pipe makers keen in open bidding. Prices on such business are unsettled. However, a considerable tonnage of pipe is being placed privately at firm prices. One such order placed the past week was for 200 tons of 10 in. and 1200 tons of 12 in. pipe for prompt and nearby delivery. French pipe interests entered the market about three weeks ago, but to date have not made a round tonnage sale of importance.

Reinforcing steel firms are watching Connecticut and New York State for developments. Connecticut will spend \$20,000,000 between now and Jan. 1, next, on state controlled buildings alone, and upstate New York has a \$60,000,000 program involving much reinforcing steel. New local projects involve 20 to 60 ton lots.

THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

*... Industrial buying continues at low level in most districts, although volume of inquiries is being maintained
... Vocational schools buying equipment in Cleveland and Brooklyn.*

Cleveland Vocational School Spends \$72,000 for Machinery

CLEVELAND—While activity on the whole is light, a number of individual bright spots have appeared in the past week. Chevrolet Gear & Axle, Detroit, plans to take bids in the near future on used machinery, and this move apparently will call for some replacement business. Awards totaling \$72,004 have been made for the new Toledo, Ohio, vocational high school for lathes, shapers, milling machines, grinders and other equipment. Motch & Merryweather Machinery Co. was allocated contracts totaling \$25,680 for this school; National Supply Co., \$18,324; Strong, Carlisle & Hammond Co., \$6,532; Pratt & Whitney, \$5,424; Brown & Sharpe Mfg. Co., \$3,430; Hendey Machine Co., \$3,468, and Kirkby Machinery Co., \$9,846. The Cleveland Diesel Engine division of General Motors Corp. has been awarded contracts totaling \$2,625,000 for 15 engines required by the Navy. Cleveland Automatic Machine Co. submitted the low bid for four automatic screw machines for the Newport, R. I., Navy shops.

Industrial Buying at Low Ebb in Middle West

CHICAGO—There has been no improvement in the slow rate with which orders are being received. Industrial buying is practically at a standstill, and the lists issued over a month ago by the Milwaukee and Santa Fe railroads are still uncompleted. Electro-Motive Corp. last week purchased two machines for turning cylinder liners, and there is a possibility that John Deere Tractor Co. will buy soon for its Waterloo, Iowa, plant where an expansion is being planned and where some tooling may also be necessary for production of a medium-sized tractor. Wilson & Bennett Mfg. Co. is planning an expansion in Texas, where presses and drum equipment may be bought for the manufacture of steel barrels and containers.

Current Dip in Orders Believed to Be Temporary

CINCINNATI—The machinery market in this area was off last week from previous levels. Whether the easing of demand is a downward fluctuation in the heretofore spotty market and merely a temporary reaction or not is a question. The fact that inquiry is still active and apparently sincere, coupled with a small but steady demand for heavy tools, gives

support to the general feeling that the current drop was merely a temporary reaction. Lathes, heretofore most active in demand, were most notable in the withdrawal of buying interest. Milling and grinding machinery was off only slightly from the preceding level. Drilling tools are still noticeably sluggish.

Local factories are now operating at about 25 per cent of capacity output, new schedules being arranged to meet bookings. Some plants have about cleaned up backlogs and are now operating on stock machines to keep backlogs intact.

Cancellation of Orders Reported on Ford Project

DETROIT—With activity still at a low ebb, the local machinery market is weighing reports of cancellations on orders for equipment intended for pro-

Welding Facilitates Fabrication of Flood Gates

(CONTINUED FROM PAGE 37)

This procedure required only minor cutting at the site to facilitate proper fitting of certain joint details.

The erection of the gates at the site required welding to be done in all positions. Wherever possible the structure was designed to facilitate down-hand welding. It was impossible to eliminate vertical welding. This is particularly true on the face plates where long vertical butt welds were required between adjacent plates. Fig. 3 shows a welder welding the face plates. Note that the bottom row of plates was not in position at the time the picture was taken.

No Anchor Bolts in Pump House Floor

The pump house floor structure consists of 36-in., 260-lb. "I" beams welded together. These beams support the weight of the motors and propellers plus the reaction of the water. An unusual feature of the pump house floor structure is the fact that no anchor bolts are used. The beams are all anchored by angle sec-

duction of a new light Ford. Because certain phases of the Ford program apparently still are being pursued, however, it is impossible to label the project dead or alive. However, it may take its place alongside the Pontiac, Olds, Dodge and Plymouth engine programs which have been dropped.

Brooklyn Vocational School Asks for Bids on Large List

NEW YORK—Sales continue to drag along the bottom, and most of the trade is depressed by the market outlook. Some projects that looked promising a few weeks ago have been abandoned, but on the other hand some that had been put on the shelf have been reopened. In recent weeks a steel company bought about \$100,000 worth of equipment for turning shells, and the list of the Brooklyn Navy yard is still the most promising program in sight. Canadian aircraft companies are jobbing out some parts work in this vicinity, and this increased business may lead to machinery buying. The Board of Education of New York City is calling for bids June 17 on a large amount of equipment for an automotive vocational high school in Brooklyn. On the list are 26 lathes, two millers, two shapers, five drill presses, five sensitive drills, three power hack saws, nine tool and pedestal grinders, 19 bench grinders, 59 portable electric drills, eight electric polishers, five valve grinders, three electrical sanders, 219 vises and a host of miscellaneous equipment, as well as representative samples of every car and truck made.

tions grouted into the concrete and welded to the beams.

The three pumps discharge the water past 47,000-lb. cast steel diffusers (Fig. 1) and into weld-fabricated steel chambers 9-ft. high, 16-ft. wide and 20-ft. long. These chambers are constructed of ½-in. plates and contain a series of vanes for directing the flow of water into the outlet chambers and preventing eddy currents.

All concrete steel reinforcing members are welded together. The trash-rack is also of welded construction except for the lower 5-ft. which is made of a stainless material unsuitable for welding.

All welding was done with coated type electrodes. These electrodes were suitable for welding in all positions.

The construction of this flood control project is another one of the many instances where arc welding has played an important part. In this case it afforded an ideal method of fabrication, made possible a great reduction in the weight of the two gates, thereby reducing the size of the auxiliary lifting equipment and the cost of raw materials, and made possible rapid completion of the entire project, in time for a spring flood should one occur.

PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

Reynolds Metals Co., Inc., 19 Rector Street, New York, manufacturer of metal foils and allied products, has approved plans for erection of one-story addition to branch plant at 1259-65 South Campbell Avenue, Chicago, 50 x 160 ft. Cost over \$50,000 with equipment. **Alexander L. Levy**, 179 West Washington Street, Chicago, is architect.

Commanding Officer, Ordnance Department, Watervliet Arsenal, Watervliet, N. Y., asks bids until June 30 for gages, 10 groups in all (Circular 107); until July 1, one to four turret lathes (Circular 110).

Ace Lacquer & Chemical Co., Inc., 36-15 Twenty-second Street, Long Island City, has leased a one-story building at 11-14 Thirty-third Avenue for plant.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until June 20 for clips (Circular 252); until June 21 for 43,000 lin. ft. of cable and 34 reels (Circular 248); until June 22, signal generators (Circular 226); control board, switchboard, relay units, etc. (Circular 250); until June 24, 27,000 ft. of paper-insulated, lead-covered cable, 5000 to 40,000 ft. of cable, one reel (Circular 253); until June 28, spare parts for power units (Circular 228).

Bureau of Yards and Docks, Navy Department, Washington, asks bids until June 22 for improvements, parts replacements, etc., in boilers and incinerator at Naval Hospital, Brooklyn (Specifications 8710).

Beverwyck Breweries, Inc., 156 North Ferry Street, Albany, N. Y., has let general contract to Cassidy & Gallagher, 11 South Lake Avenue, for extensions and improvements in main brewery. Cost over \$45,000 with equipment. **T. L. Gleason**, 544 Warren Street, is architect.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June 21 for 36 large size metal shipping caskets (Schedule 3716); until June 24, one 30-ton diesel engine-driven locomotive and spare parts (Schedule 3762); until July 1, 10 burglar-resisting safes (Schedule 3673) for Brooklyn Navy Yard.

New Jersey Claude Neon Corp., 235 Elizabeth Avenue, Newark, N. J., manufacturer of tube lighting equipment and parts, has leased over 10,000 sq. ft. of floor space in building at 240-44 Central Avenue for new plant. Present works will be removed to new location and capacity increased.

Commanding Officer, Ordnance Department, Picatinny Arsenal, Dover, N. J., asks bids until June 23 for 15 pelleting presses (Circular 983), five ammonium nitrate screening machines and four TNT sifters (Circular 979), 12 TNT melting units (Circular 978), 12 acid pumping units (Circular 1001), 15 to 30 engine units (Circular 1002).

Mills Novelty Co., 4110 West Fullerton Avenue, Chicago, manufacturer of coin-operated vending machines, parts, etc., has acquired building at Eighty-second Street and Chester Branch of Reading Railway, Philadelphia, for new factory branch, storage and distributing plant.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until June 20 for heat-treated aluminum-alloy castings (Circular 1133); until June 21 for reworking 150,000 lb. of gilding metal clippings into 150,000 lb. of gilding metal (Circular 1092); reworking 250,000 lb. of scrap metal into gilding metal (Circular 1093), one eight-spindle machine for finishing heads of 75 m/m cartridge cases (Circular 1128), one horizontal universal milling machine (Circular 1129), reworking 400,000 lb. of scrap brass into cartridge brass cups (Circular 1090), reworking scrap metal into 250,000 lb. of lead antimony alloy (Circular 1089).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June

24 for one motor-driven cutter and radius grinding machine (Schedule 3721) for Philadelphia Navy Yard.

◀ BUFFALO DISTRICT ▶

Alfa Anso Corp., Charles Street, Binghamton, N. Y., manufacturer of cameras, lenses, precision photographic equipment, etc., has let general contract to Wark & Co., 1608 Chestnut Street, Philadelphia, for four-story and basement addition, 75 x 160 ft. Cost close to \$150,000 with equipment. **Lockwood Greene Engineers, Inc.**, 30 Rockefeller Plaza, New York, is architect and engineer.

Erie Railroad Co., Allegheny-Meadville Division, Salamanca, N. Y., has authorized rebuilding part of car and locomotive repair and maintenance shops recently destroyed by fire, and will erect five one-story shop units for forge, machine, parts and other department's to replace single structure. Cost close to \$100,000 with equipment. Main offices of company are at Cleveland.

◀ NEW ENGLAND ▶

Briesenick-Shelton Co., Derby, Conn., manufacturer of wire reels, etc., has purchased about five-acre tract on Nichols Road, near Shelton, Conn., for new one-story plant, 65 x 125 ft., to replace works at Derby, Conn., destroyed by fire a few weeks ago. Complete new equipment will be installed. Cost over \$50,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June 21 for one drilling machine (Schedule 3682); until June 28, alloy steel forgings (Schedule 3749) for Newport, R. I. Naval Air Station; composition valves, union ends (Schedule 3755) for Boston Navy Yard.

Colonial Beacon Oil Co., Inc., 378 Stuart Street, Boston, has let general contract to H. V. Collins, 4 Westminster Street, Providence, R. I., for new bulk oil storage and distributing plant at Hallowell, Me., consisting of two main one-story buildings and garage unit for company motor trucks. Cost over \$50,000 with steel tanks, pumping machinery and other equipment.

Commanding Officer, Ordnance Department, Springfield Armory, Springfield, Mass., asks bids until June 24 for one single-spindle automatic screw machine (Circular 275); until June 30, five chambering machines (Circular 279); until July 6, one automatic milling and centering double-end machine (Circular 287).

◀ WASHINGTON DIST. ▶

United States Engineer Office, Post Office Building, Baltimore, asks bids until June 21 for seven 500,000-gal. per min., 11 30,000-gal. per min., and 11 15,000-gal. per min., vertical propeller-type pumping units, direct-connected to vertical electric motors, including 10 sets of control and switch-gear equipment, for delivery at Kingston, Pa.

Albert F. Goetze, Inc., 2401 Sinclair Lane, Baltimore, meat packer, has asked bids on general contract for two-story addition. Cost over \$50,000 with equipment.

General Purchasing Officer, Panama Canal, Washington, asks bids until June 22 for solid manganese steel frogs, self-guarded bolted frogs, spring rail frogs, split switches, bronze pipe railings, cylinder mortise locks, tackle blocks and other equipment (Schedule 3360); until June 28, one motor-generator-exciter set, 500-kva., rating, with one switchgear and control equipment, two 500-kva. transformers, two 25-kva. transformers, cable, power distribution cable, two oil circuit breakers (Schedule 3359).

Hunter Baltimore Rye Distillery, Inc., 1900 East Fort Avenue, Baltimore, has asked bids on general contract for one-story steam power house, 49 x 49 ft., and one-story pumping plant, 30 x 33 ft., at main distillery at Gwynnbrook, near Baltimore. Cost over \$50,-

000 with equipment. **Moehle & Associates**, 217 West Franklin Street, Baltimore, are architects.

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until June 24 for saw blades, cross bars, wrecking bars, twist drills, sheet-metal blocks, steel wire cleaning brushes, chisels, clamps, files, gages, hammers, file holders, soldering irons, punches, saws, wrenches, shears, scrapers and other tools (Circular 398-174).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June 21 for one motor-driven milling machine and equipment (Schedule 3745) for Bellevue station; two engine-driven generator units and accessories (Schedule 3738) for Anacostia, D. C.; chrome-molybdenum steel tubing (Schedule 3678), 36 pneumatic hand portable sanding machines (Schedule 3717), dies, die-stocks, taps, threading sets and tap wrenches (Schedule 3622) for Eastern and Western Navy yards; two motor controller boiler feed pumps and two motors (Schedule 3681) for Portsmouth yard.

◀ SOUTH ATLANTIC ▶

Bureau of Yards and Docks, Navy Department, Washington, asks bids until June 22 for one gas engine-driven air compressor, 1150 cu. ft. of air per min., for Naval Air Station, Pensacola, Fla. (Specifications 8734).

Gulf Fertilizer Co., Thirty-sixth Street, near Broadway, Tampa, Fla., has let general contract to Fred Howland, Inc., Postal Building, Miami, Fla., for one-story branch mixing, storage, packing and distributing plant at Port Everglades, Fla. Cost over \$65,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June 21 for five combined auxiliary air and circulating pumps and spare parts (Schedule 3747) for Charleston, S. C., and Eastern and Western Navy yards.

◀ SOUTHWEST ▶

Anheuser-Busch, Inc., 721 Pestalozzi Street, St. Louis, has let general contract to C. George Saenger, 3816 Fillmore Street, for one-story addition to brewery, 30 x 90 ft., for expansion in filter division. Cost over \$40,000 with equipment.

United States Engineer Office, Court and Custom House, St. Louis, asks bids until June 23 for one reduction gear for installation between an existing 1435-hp. steam turbine and dredge pump of U. S. dredge Fort Chartres (Circular 192).

Oil Country Specialties Mfg. Co., Coffeyville, Kan., manufacturer of refined oil products, plans rebuilding part of plant recently destroyed by fire. Loss over \$75,000 with equipment.

Hammann Exploration Co., Gulf Building, Houston, Tex., has approved plans for new natural gasoline refinery in Hammann oil field, near Bay City, Matagorda County, Tex., with power house, compressor station, steel storage tank division and other departments. Cost about \$100,000 with equipment.

Southland Paper Mills, Inc., Lufkin, Tex., E. L. Kurth, president, and head of Angelina Lumber Co., Lufkin, will begin work in 30 to 60 days on new pulp and paper mill at Lufkin for production of newsprint. It will comprise one and multi-story buildings for pulp division, digester house, paper-making division, storage and distributing units, power house, pumping station and other buildings. Cost close to \$5,000,000 with machinery. Completion is scheduled in 1939, when it is proposed to add other units. Company has arranged an RFC loan and carried out other financing totaling about \$7,000,000. **George F. Hardy**, 305 Broadway, New York, is engineer.

◀ SOUTH CENTRAL ▶

Coca-Cola Co., 310 North Avenue, N.W., Atlanta, Ga., plans new one-story mechanical-bottling, storage and distributing plant at New Orleans, where site is being secured. Cost over \$75,000 with equipment. **Robert & Co.**, Bona Allen Building, Atlanta, are architects and engineers.

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160 Tons

STRESS-RELIEVING CAPACITY



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Stress-relieving furnace built in 1937 for the Chicago Bridge & Iron Company, Birmingham, Alabama, by the Rust Furnace Company.

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Refractories Division

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New York, N. Y.

BABCOCK & WILCOX

Director of Purchases. Tennessee Valley Authority, Knoxville, Tenn., asks bids until June 20 for galvanized steel for switchyard structures at Guntersville, Ala., and Chickamauga, Tenn., hydroelectric power plants; until June 23, direct-firing powdered coal units for rotary kilns for department of chemical engineering; until June 24, one 275-ton overhead electric traveling crane for power house at Chickamauga.

Lewis County Board of Commissioners. Vanceburg, Ky., has plans for new county-owned electric light and power plant. Cost about \$148,000 with equipment. A bond issue in that amount has been authorized.

United States Engineer Office. Vicksburg, Miss., asks bids until June 20 for one heat exchanger for lubricating oil and one heat exchanger for engine cooling water (Circular 295).

G. & J. Mfg. Co., Dallas, Tex., canning and packing machinery manufacturer, has under construction at 3914 Willow Street, Dallas, a \$100,000 two-story structure for turning out canning equipment and air-conditioning supplies.

◀ OHIO AND INDIANA ▶

Hamilton Metal Products Co., Belle Avenue and Baltimore & Ohio Railroad, Hamilton, Ohio, manufacturer of safe deposit boxes, etc., has let general contract to A. Benzinger & Son, 709 East Ninth Street, for one-story addition, 40 x 160 ft. Cost close to \$50,000 with equipment. John F. Calvert, Glenn Building, Cincinnati, is architect.

Shell Petroleum Corp., Shell Building, St. Louis, has plans for new bulk gasoline storage and distributing plant at Lima, Ohio, including pumping station, steel tank storage units and other operating facilities. Cost close to \$100,000 with equipment.

Contracting Officer, Materiel Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until June 20 for one full revolving-type crawler crane, with crane boom and 1/2-cu. yd. clamshell rehandling and light-digging bucket (Circular 1057), 10 magnesium alloy oil tanks (Circular 1075), 426 landing gear pressure gage assemblies (Circular 1066), connection assemblies for oxygen low-pressure lines, nipples for oxygen high-pressure connections, oxygen high-pressure ground union nuts, oxygen high-pressure seat supply connections (Circular 1071), 128 stand assemblies for engine overhaul and 278 engine stand plates (Circular 1060); until June 21, 100 wind indicator cone assemblies (Circular 1077), 37 fuel mixture indicator assemblies (Circular 1085), 10,000 fuel line strainer cover gaskets (Circular 1067).

Steel Products Engineering Co., West Main Street, Springfield, Ohio, mechanical stokers and parts, gears, special machinery, etc., has let general contract to C. O. Romig, Springfield, for one-story addition, 60 x 160 ft. Cost close to \$60,000 with equipment. Lloyd J. Zeller, Columbia Building, is architect.

Indiana State Highway Commission, State House, Indianapolis, has asked bids on general contract for equipment storage and distributing plant at Monticello, Ind., including motor truck service and garage unit, oil house and other buildings, main one and two-story unit, 52 x 122 ft., and three one-story adjoining structures, 32 x 80 ft., and smaller. Cost over \$75,000 with equipment. Bliss B. Straight is supervising architect for commission.

Purchasing and Contracting Officer, Office of District Quartermaster, CCC, Fort Benjamin Harrison, Ind., asks bids until June 21 for 10,000 ft. of weatherproof wire, 10,000 ft. of rubber-covered wire, 5000 ft. of cable, outlet boxes, switches and other equipment (Circular 5501-60).

◀ WESTERN PA. DIST. ▶

Appalachian Electric Power Co., Roanoke, Va., has acquired property at Seventh Avenue and Eleventh Street, Huntington, W. Va., for new equipment and service building, with office facilities. Mechanical departments will be installed for wire and cable division, meter

department, equipment storage and distribution. Cost over \$350,000 with equipment.

United States Engineer Office, Huntington, W. Va., will take bids soon for equipment for construction of flood control facilities at Huntington and Kenova, W. Va., including power shovel, elevating earth graders, conveying, loading and other mechanical equipment, wire and cable, etc. Cost close to \$100,000.

◀ MICHIGAN DISTRICT ▶

City Council, Kalamazoo, Mich., asks bids until June 27 for extensions and improvements in municipal electric light and power plant, including installation of steam and electric equipment, 25-ton traveling crane, traveling screens and other equipment. City purchasing agent is in charge.

Roberts Brass Mfg. Co., 5435 West Fort Street, Detroit, manufacturer of valves, gages and other brass goods, has plans for extensions and improvements. Cost close to \$30,000 with equipment. Leo M. Bauer, 534 F-P Building, is architect.

Consumers Power Co., Jackson, Mich., has approved plans for extensions in power and distributing lines for rural electrification systems in Allegan, Mecosta, Kent and Ottawa Counties, including power substation and service facilities. Cost over \$75,000.

Great Lakes Electrical Co., 1620 West Lafayette Boulevard, Detroit, electrical equipment and supplies, will take bids soon on general contract for one-story storage and distributing plant. Cost over \$45,000 with equipment. Norman Kreeke, 243 West Congress Street, is architect.

◀ MIDDLE WEST ▶

Link-Belt Co., 307 North Michigan Avenue, Chicago, has let general contract to Carl M. Geupel Construction Co., Hume-Mansur Building, Indianapolis, for one-story addition to branch plant at Indianapolis, 280 x 280 ft., and one-story boiler house adjoining, 51 x 60 ft. Cost over \$250,000 with equipment. D. A. Bohlen & Son, Majestic Building, Indianapolis, are architects.

City Council, Schuyler, Neb., plans extensions and improvements in municipal electric light and power plant, including additional equipment. Cost over \$50,000 with equipment. Black & Veatch, 4706 Broadway, Kansas City, Mo., are consulting engineers.

United States Engineer Office, Rock Island, Ill., asks bids until June 23 for one pumping unit with electric motor and accessory parts, and suction and discharge piping for Union Township Drainage District, Lewis County, Mo. (Circular 309).

Common Council, Coon Rapids, Iowa, asks bids until June 27 for one 575 to 725-hp. diesel engine unit and auxiliary equipment for municipal light and power plant. A. S. Harrington, Baum Building, Omaha, Neb., is consulting engineer.

Northwestern Yeast Co., 1740-46 North Ashland Avenue, Chicago, has let general contract to Kaiser-Ducett Co., 80 East Jackson Boulevard, for three-story addition, 60 x 85 ft., with four-story section, 21 x 85 ft., for storage and distribution. Cost over \$70,000 with equipment. George L. Lehle, 111 West Washington Street, is architect.

District Quartermaster, Sparta, CCC District, Sparta, Wis., asks bids until June 20 for galvanized soft wire, bolts, nuts, washers, split ring connectors, screws, casement fasteners, thumb lathes and other equipment (Circular 7601-128); until June 22, wire, rigid steel conduit, pipe straps, switches and other equipment (Circular 7601-131).

City Council, Kaukauna, Wis., has engaged Mead, Ward & Hunt, consulting hydraulic engineers, Madison, Wis., to design new municipal hydroelectric generating plant to cost about \$100,000, as PWA project. Herbert Weckwirth is president of municipal utilities board.

Winnebago County Board of Supervisors, Oshkosh, Wis., is considering bids opened June 10 for erection of highway equipment storage and service building, 80 x 200 ft.,

part two stories, to cost about \$75,000 with equipment. E. M. Bird is County highway commissioner and Arthur Hedke, County clerk.

National Cylinder Gas Co., 2615 West Greves Street, Milwaukee, has placed contract with Universal Construction Co., Inc., 605 South Twelfth Street, local, for addition to factory and general alterations.

◀ PACIFIC COAST ▶

Security Engineering Co., 108 West Whittier Boulevard, Whittier, Cal., manufacturer of mechanical equipment, parts, etc., has let contract to Consolidated Steel Corp., Arcade Station, Los Angeles, for one-story machine shop, 50 x 55 ft.

Bercut-Richards Co., Sacramento, Cal., food packer and canner, plans early rebuilding of part of plant, including storage and distributing division, recently destroyed by fire. Loss over \$350,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until June 21 for four motor-driven floor-type sensitive drills (Schedule 3733), three motor-driven universal tool and cutter grinding machines (Schedule 3732), for Western Navy yards; one motor-driven bench lathe (Schedule 3731), two floor-type, motor-driven grinders (Schedule 3730), one motor-driven radial drill (Schedule 3728) for San Pedro Naval Air Station; five motor-driven engine lathes (Schedule 3734), two motor-driven engine lathes (Schedule 3735) for San Pedro and Puget Sound yards; 350,000 lin. ft. of flexible steel cable (Schedule 3689) for San Diego Naval Air Station; 14,000 lin. ft. of insulated electric cable (Schedule 3737); until June 24, one motor-driven combination contour metal-sawing, filing and polishing machine. (Schedule 3687); until June 28, one "wildcat" winding capstan, electrically-operated, including spare parts (Schedule 3778) for Mare Island yard.

Deaser Tire Products Co., 6211 Cottage Street, Huntington Park, Los Angeles, automobile tires, etc., plans rebuilding part of plant recently destroyed by fire. Loss close to \$400,000 with equipment.

Bureau of Reclamation, Denver, asks bids until June 23 for 18 cast steel draft tube pier noses and 108 anchor bolt assemblies for Grand Coulee power plant, Wash. (Specifications 1080-D).

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans soon for one-story heavy material storage and distributing building at Puget Sound Navy Yard, for which an appropriation of \$250,000 is being secured, including main and accessory equipment; also plans for one-story paint shop at Mare Island Navy Yard, for which fund of \$175,000 is being authorized, including equipment.

◀ FOREIGN ▶

Goodyear Tire & Rubber Co., Akron, Ohio, plans new automobile tire and tube manufacturing plant near Stockholm, Sweden, where large tract has been acquired. It is scheduled for completion in about 12 months. Cost close to \$1,500,000 with machinery.

Under Secretary of State, Public Service, Sharia El-Falaki No. 25, Cairo, Egypt, asks bids until Aug. 24 for series of pumping plants for Bosat Water Works, comprising an electrically-operated main pumping station at Bosat, auxiliary pumping plant on Nile River, a diesel engine-operated pumping station for booster service at Kafr El-Arab, and an electrically-driven booster pumping plant at Damietta. Plans at office of Consulate General of Egypt, 103 Park Avenue, New York, and office of chief inspecting engineer for Egyptian Government, 41 Tothill Street, London, England.

Bradley Brothers Pty., Ltd., Sydney, New South Wales, Australia, manufacturer of automobile radiators and kindred equipment, plans one-story branch plant near Melbourne, Victoria, including parts production and assembling. Cost close to \$100,000 with equipment.

JUST BETWEEN US TWO

Fire Laddy Arrives with Milkman

BEHIND the hands is a Byronic profile, property of one of the younger stars in your family journal's editorial constellation.

Name: William Alexander Phair, Associate Editor.

Distinguishing characteristic: Earnestness—life is long, life is earnest, and the grave is not its goal. All through six years in foundry and management work he burned with an ambition to write. As he burned he wrote—and not merely for his own amazement either. He was able to make it pay. So inevitably came the day—May 1, 1937—when he began to be paid for writing in the daytime.

No one has yet told him about the eight-hour day. Sometime we are going to sleep all night in the office and find out what time he gets in in the morning. One of his jobs is to compile the Capital Goods Index on page 75. In his spare time he helps direct the affairs of the American Foundrymen's Association's Metropolitan, and puts out fires for the Garwood, N. J., volunteer fire department at a dollar a fire.

Vice: Photography. Has hundreds of dollars worth of gadgets—light meters, trick snappers, etc.—also a camera—all very impressive. He frequently gets as good results as you do with your two-dollar Brownie—and is much more pleased.

Married: Hell, no!

It Floats Through the Air

THE State Department can get itself out of that embarrassing situation in connection with the export of helium to Germany if it will look under "alloy steels" in a certain encyclopedia, which states that advances have been such as to reduce weight, in some cases, as much as 100 per cent. Here obviously is the ideal material for dirigible construction. No need for helium.

New Goods Item

A FAMILY fortress air raid shelter, made of galvanized corrugated sheets, is described by our contemporary, *The Iron-monger* (England). You install it in your garden. When not in use it serves as a playhouse for children. Price for a six-seater is £3 6s., sand bags 3s. 3d. a dozen.

Unaptronyms

A MANUFACTURING firm's name should harmonize with the product. Obviously the Lochinvar Corp., Detroit, should make wedding rings. Instead it makes furnaces. "Happy Thought" is a natural for a greeting card company, but it seems to us it is wasted on another manufacturer of furnaces—the Happy Thought Foundry Co., of London, Ont.

Just Among Us Two

WITH lofty contempt for the purist vote, Senator Vandenberg referred, in his Memorial Day address, to amity between 130,000,000 Americans.

Deep Sea Census-Taking

UNLESS our Nutley, N. J., contact, A.D.W., deceives us, the Bureau of Standards plans a "National Catalogue of Wealth Producing Mobile Primary Energy Sources."

As you may be slow on the uptake and don't grasp just what that simple title embraces, we will explain that it covers mineral energy, agricultural energy, forest energy, marine life, and terrestrial power—all evaluated in calories, B.t.u.'s and intrinsic dollars per 100 lb.

Of course, it won't be completed next week, nor perhaps in the week after, for it is quite a job. Take fish, for example. You have to train 'em to swim all in the same direction, so their energy can be utilized. Take clams. First you have to count 'em, and then sort 'em, for the cherrystones use up far more B.t.u.'s in flapping than do the little necks.

As the chorus girl said when she read "The Outline of History," we can hardly wait to see how it turns out.

—A. H. D.



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AUTOMATIC

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PRODUCTS INDEX

WHO MAKES IT

Here you find a weekly listing of hundreds of products with the names and addresses of manufacturers. The advertisements of these companies appear in The Iron Age.

- ABRASIVE WHEELS**—See Grinding Wheels
- ABRASIVE CLOTH & PAPER**
Norton Co., Worcester, Mass.
- ABRASIVES**—Steel Shot and Grit
Fangborn Corporation, Hagerstown, Md.
- ACCESSORIES**—Welding
Lincoln Electric Co., The, Cleveland, Philadelphia.
- ACCUMULATORS**—Hydraulic
Baldwin-Southwark Corp., Southwark Div., Philadelphia.
Hydraulic GmbH, Duisburg, Germany.
Lake Erie Engineering Corp., 68 Kenmore Sta., Buffalo, N. Y.
Wood, B. D., & Co., Philadelphia.
- ACETYLENE**—Dissolved in Cylinders & Small Tanks
Air Reduction Sales Co., 60 East 42nd St., N. Y. C.
Linde Air Products Company, The, 30 East 42nd St., N. Y. C.
- ACID-PROOF CEMENT**
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
- ACIDS**—Pickling
American Chemical Paint Co., Ambler, Pa.
Du Pont de Nemours, E. I., & Co., Inc., Grasseil Chemicals Dept., Wilmington, Del.
Pennsylvania Salt Mfg. Co., Philadelphia, Pa.
- AIR TANKS AND CYLINDERS**
Scalfe, William B., & Sons Co., Pith.
- AIRMETERS & VOLTMETERS**
Weston Electrical Instrument Corp., New ark, N. J.
- ALLOYS**—Copper
American Brass Co., The, Waterbury, Conn.
- ALLOYS**—Ferro
Electro Metallurgical Sales Corp., 30 East 42nd St., N. Y. C.
- ALLOYS**—For Die Surfacing
Wilcox-Rich Div. of Eaton Mfg. Co., Detroit.
- ALLOYS**—Magnesium
Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.
- ALLOYS**—Phosphor Bronze
Phosphor Bronze Smelting Co., The, Phila.
- ALLOYS**—Titanium
Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.
- ALLOYS**—Tungsten
Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.
- ALLOYS**—Vanadium
Vanadium Corp. of America, 420 Lexington Ave., N. Y. C.
- ALLOYS**—Zinc Base Die Casting
Gardiner Metal Co., 4881 S. Campbell Ave., Chicago.
New Jersey Zinc Co., The, 160 Front St., N. Y. C.
- ALUMINUM**
Aluminum Co. of America, Pittsburgh.
- AMMETERS AND VOLTMETERS**—Recording
Leeds & Northrup Co., Philadelphia.
- AMMONIA RECOVERY PLANTS**
Koppers Co., Pittsburgh.
- ANGLES, BEAMS, CHANNELS AND TEES**
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.
Inland Steel Co., Chicago.
Jones & Laughlin Steel Corp., Pittsburgh.
Laclede Steel Co., St. Louis, Mo.
Nictown Plate Washer Co., Inc., Philadelphia.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
- ANNEALING**—See Heat Treating
- ANNEALING BOXES**
United Engineering & Fdry. Co., Pith.
- ANNEALING COVERS**
Surface Combustion Corp., 2375 Dorst St., Toledo.
- ANODES**—All Types
Du Pont de Nemours, E. I., & Co., Inc., Grasseil Chemicals Dept., Wilmington, Del.
Udylite Co., The, Detroit.
- ANODES**—Cadmium
Du Pont de Nemours, E. I., & Co., Inc., Grasseil Chemicals Dept., Wilmington, Del.
- ANODES**—Lead
National Lead Co., 111 Bdw., N. Y. C.
- APPAREL**—Welding
Lincoln Electric Co., The, Cleveland.
- ARBORS**
Cincinnati (Ohio) Milling Mch. Co., The, Morse Twist Drill & Mch. Co., New Bedford, Mass.
- ARMORING MACHINERY**—Cable, Wire, Hose
Sleeper & Hartley, Inc., Worcester, Mass.
- ARRESTERS**—Spark
Harrington & King Perforating Co., Chicago.
- ASSEMBLIES**—Precision, Production
Peco Manufacturing Corp., Philadelphia.
- AXLES**—Car or Locomotive
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
- BABBITT METALS**
Bunting Brass & Bronze Co., The, Toledo, Ohio.
Cramp Brass & Iron Foundries Co., Philadelphia.
Gardiner Metal Co., 4881 S. Campbell Ave., Chicago.
National Lead Co., 111 Bdw., N. Y. C.
- BALING PRESSES**—Scrap—See Presses
—Baling
- BALLS**—Burnishing
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.
Hartford (Conn.) Steel Ball Co., The.
- BALLS**—Steel, Brass or Bronze
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.
Fafnir Bearing Co., New Britain, Conn.
Hartford (Conn.) Steel Ball Co., The.
New Departure Div., General Motors Corp., Bristol, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Strom Steel Ball Co., Cicero, Ill.
- BANDS**—Steel
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
- BARRELS**—Burnishing
Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.
- BARRELS**—Tumbling
Baird Mch. Co., The, Bridgeport, Conn.
Hartford (Conn.) Steel Ball Co., The.
Whiting Corp., Harvey, Ill.
- BARS**—Alloy
Republic Steel Corp., Cleveland, Ohio.
- BARS**—Aluminum
Aluminum Co. of America, Pittsburgh.
- BARS**—Brass, Bronze or Copper
Bunting Brass & Bronze Co., Toledo, Ohio.
Johnson Bronze Co., 505 So. Mill St., New Castle, Pa.
- BARS**—Cold Drawn
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Cleveland.
Bliss & Laughlin, Inc., Harvey, Ill.; Buffalo, N. Y.
Union Drawn Steel Co., Massillon, Ohio.
- BARS**—Concrete, Reinforcing
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.
Jones & Laughlin Steel Corp., Pittsburgh.
Laclede Steel Co., St. Louis, Mo.
Nictown Plate Washer Co., Inc., Philadelphia.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
- BARS**—Magnesium Alloys
Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.
- BARS**—Rustless
Rustless Iron & Steel Corp., Baltimore, Md.
- BARS**—Steel
Bethlehem (Pa.) Steel Company.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Great Lakes Steel Corp., Detroit.
Inland Steel Co., Chicago.
Jones & Laughlin Steel Corp., Pittsburgh.
Republic Steel Corp., Cleveland, Ohio.
Ryerson, Jos. T., & Son, Inc., Chicago.
Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
Steel & Tubes, Inc., Cleveland.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.
Weirton (W. Va.) Steel Co.
Youngstown (Ohio) Sheet & Tube Co., The.
- BASKETS**—Pickling & Dipping
Cambridge (Md.) Wire Cloth Co.
- BATTERIES**—Storage
Electric Storage Battery Co., The, Phila.
- BATTERY CHARGERS**
Cutler-Hammer, Inc., Milwaukee.
- BEAMS**—See Angles, Beams, Channels and Tees
- BEARINGS**—Babbitt
Bunting Brass & Bronze Co., The, Toledo, Ohio.
Johnson Bronze Co., 505 So. Mill St., New Castle, Pa.
- BEARINGS**—Ball
Fafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Schatz Mfg. Co., Poughkeepsie, N. Y.
- BEARINGS**—Brass and Bronze
Bunting Brass & Bronze Co., Toledo, O.
Johnson Bronze Co., 505 So. Mill St., New Castle, Pa.
National Bearing Metals Corp., Pittsburgh.
- BEARINGS**—Oilless
Bunting Brass & Bronze Co., Toledo, O.
Rhodes, R. W., Metaline Co., Inc., Long Island City, N. Y.
Richardson Co., The, Melrose Park, Ill.
- BEARINGS**—Radial
Fafnir Bearings Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
- BEARINGS**—Roll Neck
Morgan Construction Co., Worcester, Mass.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Timken Roller Bearing Co., The, Canton, O.
- BEARINGS**—Roller
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Timken Roller Bearing Co., The, Canton, O.
- BEARINGS**—Roller Tapered
Timken Roller Bearing Co., The, Canton, O.
- BEARINGS**—Rolling Mill Equipment
Richardson Co., The, Melrose Park, Ill.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Timken Roller Bearing Co., The, Canton, O.
- BEARINGS**—Shaft Hanger
Fafnir Bearing Co., New Britain, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
- BEARINGS**—Thrust
Fafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., Inc., The, Poughkeepsie, N. Y.
New Departure Div., General Motors Corp., Bristol, Conn.
SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.
Schatz Mfg. Co., The, Poughkeepsie, N. Y.
Timken Roller Bearing Co., The, Canton, O.
- BELT**—Conveyor, Elevator
Goodrich, B. F. Co., The, Akron, Ohio.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
United States Rubber Products, Inc., 1790 Broadway, N. Y. C.
- BELTING**—Leather
Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.
- BELTING**—Metal, Conveyor, High and Low Temperature
Cambridge (Md.) Wire Cloth Co.
Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.
- BELTING**—Rubber
Goodrich, B. F. Co., The, Akron, Ohio.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
United States Rubber Products, Inc., 1790 Broadway, N. Y. C.
- BELTS**—V-Type
Allis-Chalmers Mfg. Co., Milwaukee.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
- BENDING MACHINES**—Hand, Band and Angle
Excelsior Tool & Mch. Co., E. St. Louis, Ill.
- BENDING MACHINES**—Hand and Power
Buffalo (N. Y.) Forge Co., 192 Broadway, Cincinnati (Ohio) Shaper Co., The, Dreis & Krump Mfg. Co., Chicago.
G. D. S. Machinery & Supply Co., Inc., 101 Walker St., N. Y. C.
Niagara Machine & Tool Works, Buffalo, N. Y.
- BENZOL RECOVERY PLANTS**
Koppers Co., Pittsburgh.
- BERYLLIUM COPPER**
American Brass Co., The, Waterbury, Conn.
- BILLETS**—Alloy
Harrisburg (Pa.) Steel Corp.
- BILLETS**—Carbon
Harrisburg (Pa.) Steel Corp.
- BILLETS**—Chrome Nickel Steel
Rustless Iron & Steel Corp., Baltimore, Md.
- BILLETS**—Chrome Steel
Rustless Iron & Steel Corp., Baltimore, Md.
- BILLETS**—Forging
Alan Wood Steel Co., Conshohocken, Pa.
Harrisburg (Pa.) Steel Corp.
Midvale Co., The, Nictown, Phila., Pa.
Republic Steel Corp., Cleveland, Ohio.
- BILLETS**—Re-rolling
Alan Wood Steel Co., Conshohocken, Pa.
- BILLETS**—Steel
Bethlehem (Pa.) Steel Company.
Continental Steel Corp., Kokomo, Ind.
Harrisburg (Pa.) Steel Corp.
Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.
- BLANKS**—Chisel
Cleveland Steel Tool Co., The, 660 E. 82nd St., Cleveland, Ohio.
- BLANKS**—Gear and Pinion
Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.
Richardson Co., The, Melrose Park, Ill.